Pioneer sound.vision.soul

Service Manual

DEH-1650/XU/ES

ORDER NO.
CRT3176

HIGH POWER CD PLAYER WITH FM/AM TUNER

DEH-1650 XU/ES, XU/CN

DEH-1650B XU/ES

This service manual should be used together with the following manual(s):

Model No.	Order No.	Mech.Module	Remarks
CX-3110	CRT3178	S10.1	CD Mech. Module : Circuit Description, Mech. Description, Disassembly

For details, refer to "Important symbols for good services".

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER EUROPE NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936
ⓒ**PIONEER CORPORATION 2003**

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SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

● CD Section Precaution

1. Before disassembling the unit, be sure to turn off the power. Unplugging and plugging the connectors during power-on mode may damage the ICs inside the unit.
2. To protect the pickup unit from electrostatic discharge during servicing, take an appropriate treatment (shorting-solder) by referring to "the DISASSEMBLY" on page 47.
3. After replacing the pickup unit, be sure to check the grating. (See p.44.)
4. In this product, because the memory capacity of the microcomputer is insufficient, the test mode is not installed. However grating of the pickup unit can be confirmed.

[Important symbols for good services]
In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely.
When you find the procedures bearing any of the symbols, be sure to fulfill them:

1. Product safety

You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

2. Adjustments

To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

3. Cleaning

For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

4. Shipping mode and shipping screws

To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

5. Lubricants, glues, and replacement parts

Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount.For replacement parts or tools, the prescribed ones should be used.

COMPACT disc DIGITAL AUDIO

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1. SPECIFICATIONS

● **DEH-1650/XU/ES, DEH-1650B/XU/ES**

General

Rated power source ..... 14.4 V DC (allowable voltage range: 12.0 – 14.4 V DC)
Grounding system ..... Negative type
Max. current consumption ..... 10.0 A

Backup current ..... 5 mA or less

Dimensions (W × H × D):
- DIN
  - Chassis ..... 178 × 50 × 157 mm
  - Nose ..... 188 × 58 × 19 mm
- D
  - Chassis ..... 178 × 50 × 162 mm
  - Nose ..... 170 × 48 × 14 mm

Weight ..... 1.3 kg

Audio

Continuous power output is 22 W per channel minimum into 4 ohms, both channels driven 50 to 15,000 Hz with no more than 5% THD.
Maximum power output ..... 50 W × 4
Load impedance ..... 4 Ω (4 – 8 Ω allowable)
Preout max output level/output impedance ..... 2.2 V/1 kΩ
Equalizer (3-Band Parametric Equalizer):
- Low
  - Frequency ..... 40/80/100/160 Hz
  - Q Factor ..... 0.35/0.59/0.95/1.15 (+6 dB when boosted)
  - Gain ..... ±12dB
- Mid
  - Frequency ..... 200/500/1k/2k Hz
  - Q Factor ..... 0.35/0.59/0.95/1.15 (+6 dB when boosted)
  - Gain ..... ±12dB
- High
  - Frequency ..... 3.15k/8k/10k/12.5k Hz
  - Q Factor ..... 0.35/0.59/0.95/1.15 (+6 dB when boosted)
  - Gain ..... ±12dB

Loudness contour
- Low ..... +3.5 dB (100 Hz), +3 dB (10 kHz)
- Mid ..... +10 dB (100 Hz), +6.5 dB (10 kHz)
- High ..... +11 dB (100 Hz), +11 dB (10 kHz) (volume: –30 dB)

CD player

System ..... Compact disc audio system
Usable discs ..... Compact disc
Signal format:
- Sampling frequency ..... 44.1 kHz
- Number of quantization bits ..... 16; linear

Frequency characteristics ... 5 – 20,000 Hz (±1 dB)
Signal-to-noise ratio ..... 94 dB (1 kHz) (IEC-A network)
Dynamic range ..... 92 dB (1 kHz)
Number of channels ..... 2 (stereo)

FM tuner

Frequency range ..... 87.5 – 108.0 MHz
Usable sensitivity ..... 8 dBf (0.7 μV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity ..... 10 dBf (0.9 μV/75 Ω, mono)
Signal-to-noise ratio ..... 75 dB (IEC-A network)
Distortion ..... 0.3 % (at 65 dBf, 1 kHz, stereo)
0.1 % (at 65 dBf, 1 kHz, mono)
Frequency response ..... 30 – 15,000 Hz (±3 dB)
Stereo separation ..... 45 dB (at 65 dBf, 1 kHz)

AM tuner

Frequency range ..... 531 – 1,602 kHz (9 kHz)
530 – 1,640 kHz (10 kHz)
Usable sensitivity ..... 18 μV (S/N: 20 dB)
Signal-to-noise ratio ..... 65 dB (IEC-A network)

Note

Specifications and the design are subject to possible modifications without notice due to improvements. ▣

● DEH-1650/XU/CN

一般

额定电源 ..... 14.4 V DC
（容许电压范围： 12.0－14.4 V DC）
接地系统 ..... 负极型
最大电流消耗 ..... 10.0 A
Backup current ..... 5 mA or less
尺寸（宽×高×深）：
DIN
机身 ..... 178×50×157 毫米
前端部分 ..... 188×58×19 毫米
D
机身 ..... 178×50×162 毫米
前端部分 ..... 170×48×14 毫米
重量 ..... 1.3 公斤

音频

各声道连续输出功率为22 W，最小负荷4欧姆，声道范围50至15,000 Hz，仅5%THD。
最大输出功率 ..... 50 W×4
负载阻抗 ..... 4 Ω（容许范围4－8 Ω）
前输出最大输出电平 / 输出阻抗 ..... 2.2 V / 1 kΩ
均衡器（3频带参量均衡器）：
低频
频率 ..... 40/80/100/160 Hz
Q因子 ..... 0.35/0.59/0.95/1.15（加强后+6 dB）
增益 ..... ±12 dB
中频
频率 ..... 200/500/1k/2k Hz
Q因子 ..... 0.35/0.59/0.95/1.15（加强后+6 dB）
增益 ..... ±12 dB
高频
频率 ..... 3.15k/8k/10k/12.5k Hz
Q因子 ..... 0.35/0.59/0.95/1.15（加强后+6 dB）
增益 ..... ±12 dB
响度等高线
低 ..... +3.5 dB（100 Hz），+3 dB（10 kHz）
中 ..... +10 dB（100 Hz），+6.5 dB（10 kHz）
高 ..... +11 dB（100 Hz），+11 dB（10 kHz）
（音量： -30 dB）

CD 播放机

系统 ..... CD音频系统
可用碟片 ..... CD
信号格式：
取样频率 ..... 44.1 kHz
量化比特数 ..... 16；线性
频率特性 ..... 5－20,000 Hz（±1 dB）
信噪比 ..... 94 dB（1 kHz）（IEC-A网络）
动态范围 ..... 92 dB（1 kHz）
声道数 ..... 2（立体声）

FM调谐器

频率范围 ..... 87.5－108.0 MHz
有效灵敏度 ..... 8 dBf（0.7 μV/75 Ω，单声道，S/N： 30 dB）
50 dB静噪灵敏度 ..... 10 dBf（0.9 μV/75 Ω，单声道）
信噪比 ..... 75 dB（IEC-A网络）
失真 ..... 0.3 %（65 dBf，1 kHz，立体声时）
0.1 %（65 dBf，1 kHz，单声道时）
频率响应 ..... 30－15,000 Hz（±3 dB）
立体声分离度 ..... 45 dB（65 dBf，1 kHz时）

AM调谐器

频率范围 ..... 531－1,602 kHz （9 kHz）
530－1,640 kHz （10 kHz）
有效灵敏度 ..... 18 μV（S/N: 20 dB）
信噪比 ..... 65 dB（IEC-A网络）

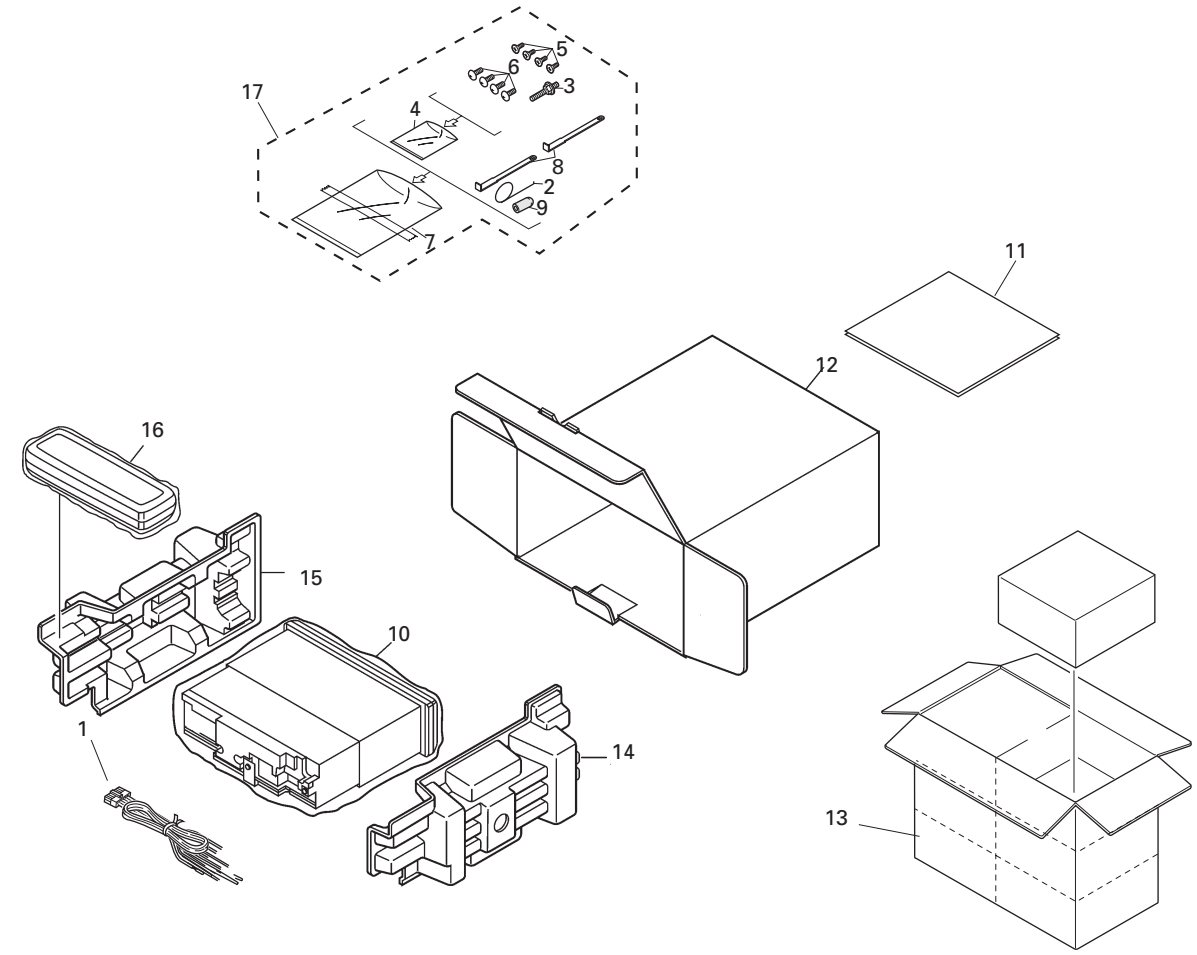
注意

因产品改进，规格和设计若有变更，恕不另行通知。▣

2. EXPLODED VIEWS AND PARTS LIST

*NOTES : • Parts marked by " * " are generally unavailable because they are not in our Master Spare Parts List.*
• Screw adjacent to ▽ mark on the product are used for disassembly.
• For the applying amount of lobricants or glue, follow the instructions in this manual.
(In the case of no amount instructions,apply as you think it appropriate.)

2.1 PACKING



(1) PACKING SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Cord Assy	CDE7060
	2	Spring	CBH1650
	3	Screw	CBA1650
*	4	Polyethylene Bag	CEG-127
	5	Screw	CRZ50P090FTC
	6	Screw	TRZ50P080FTC
*	7	Polyethylene Bag	CEG-158
	8	Handle	CNC5395
	9	Bush	CNV3930
	10	Polyethylene Bag	CEG-162

Mark	No.	Description	Part No.
	11-1	Owner's Manual	See Contrast table(2)
	11-2	Installation Manual	See Contrast table(2)
*	11-3	Warranty Card	See Contrast table(2)
	12	Carton	See Contrast table(2)
	13	Contain Box	See Contrast table(2)
	14	Protector	CHP2663
	15	Protector	CHP2664
	16	Case Assy	CXB3520
	17	Accessory Assy	CEA3439

(2) CONTRAST TABLE

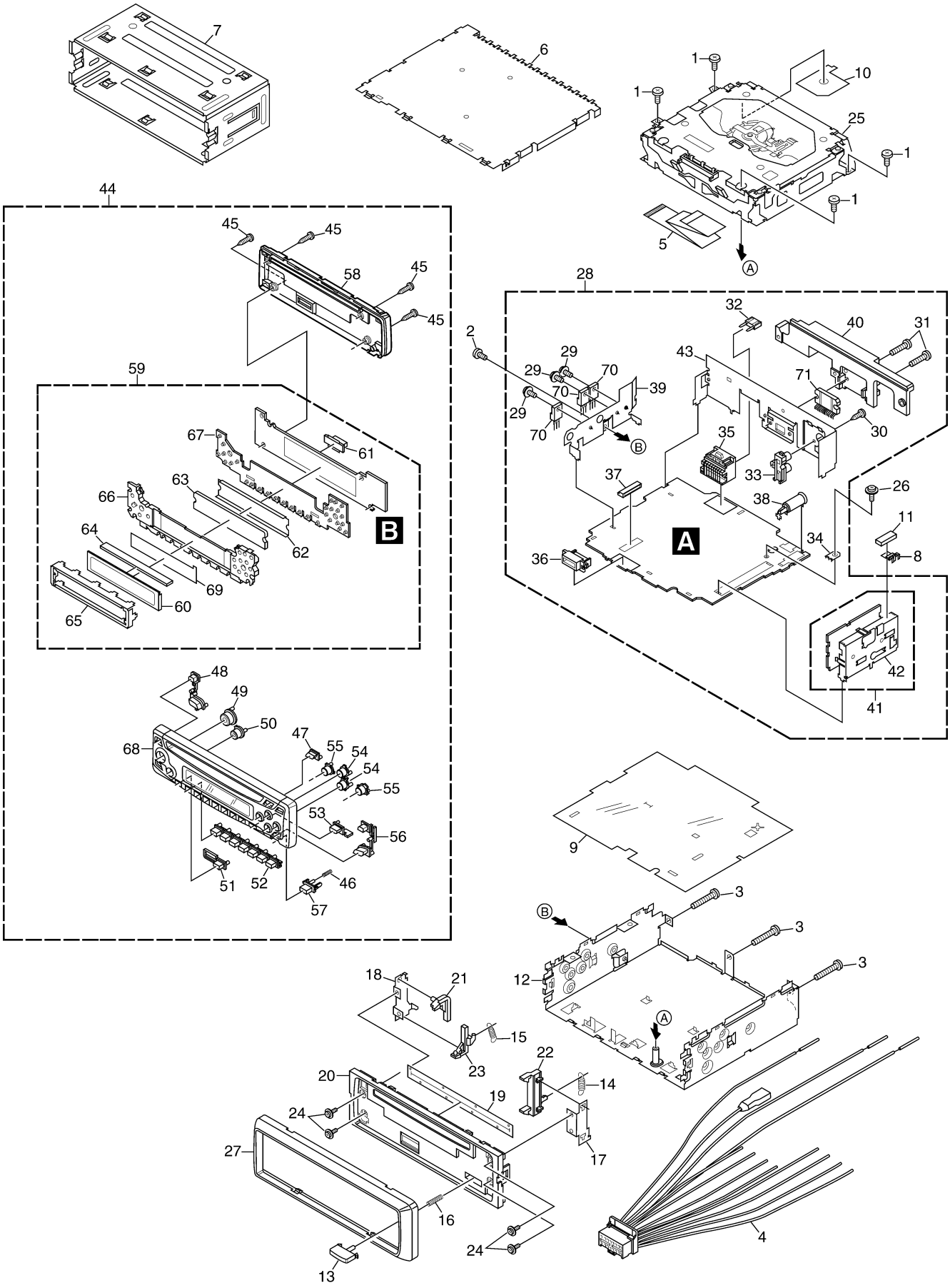
DEH-1650/XU/ES, DEH-1650B/XU/ES and DEH-1650/XU/CN are constructed the same except for the following:

Mark	NO	Description	DEH-1650/XU/ES	DEH-1650B/XU/ES	DEH-1650/XU/CN
	11-1	Owner's Manual	YRD5005	YRD5005	YRB5001
	11-2	Installation Manual	YRD5010	YRD5010	YRB5004
*	11-3	Warranty Card	Not used	Not used	ARY7046
	12	Carton	YHG5007	YHG5008	YHG5011
	13	Contain Box	YHL5007	YHL5008	YHL5011

● Owner's Manual, Installation Manual

Model	Part No.	Language
DEH-1650/XU/ES	YRD5005	English, Spanish, Portuguese(B), Traditional chinese, Arabic
DEH-1650B/XU/ES	YRD5010	English, Spanish, Portuguese(B), Traditional chinese, Arabic
DEH-1650/XU/CN	YRB5001	Casual chinese
	YRB5004	Casual chinese

2.2 EXTERIOR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(1) EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	BSZ26P060FTC
	2	Screw	BSZ30P060FTC
	3	Screw	BSZ30P200FTC
	4	Cord Assy	CDE7060
	5	Cable	CDE7113
	6	Case	CNB2793
	7	Holder	CNC8659
	8	Earth Plate	CNC8915
	9	Insulator	CNM8059
	10	Insulator	CNM8174
	11	Cushion	CNM8890
	12	Chassis Unit	CXB9542
	13	Button	CAC4836
	14	Spring	CBH1835
	15	Spring	CBH2208
	16	Spring	CBH2367
	17	Bracket	CNC6791
	18	Holder	CNC8042
	19	Cover	CNM6276
	20	Panel	CNS7238
	21	Arm	CNV4692
	22	Arm	CNV4728
	23	Arm	CNV5576
	24	Screw	IMS20P030FZK
	25	CD Mechanism Module(S10.1)	CXK5602
	26	Screw	ISS26P055FTC
	27	Panel	See Contrast table(2)
	28	Tuner Amp Unit	See Contrast table(2)
	29	Screw	ASZ26P060FTC
	30	Screw	BPZ26P080FTC
	31	Screw	BSZ26P160FTC
	32	Fuse(10A)	CEK1208
	33	Pin Jack(CN352)	CKB1057
	34	Terminal(CN402)	CKF1059
	35	Plug(CN901)	CKM1376
	36	Connector(CN831)	CKS3581
	37	Connector(CN651)	CKS3835
	38	Antenna Jack(CN401)	CKX1056
	39	Holder	CND1328
	40	Heat Sink	CNR1668
	41	FM/AM Tuner Unit	CWE1646
	42	Holder	CND1054
	43	Holder	YNC5004
	44	Detach Grille Assy	See Contrast table(2)
	45	Screw	BPZ20P100FZK
	46	Spring	CBH2210
	47	Button(CD EJECT)	YAC5001
	48	Button(CLOCK, EQ)	YAC5004
	49	Button(VOLUME+)	See Contrast table(2)
	50	Button(VOLUME-)	See Contrast table(2)
	51	Button(SRC)	YAC5011
	52	Button(1-6)	YAC5012
	53	Button(LOUD)	YAC5014
	54	Button(UP, DOWN)	See Contrast table(2)
	55	Button(LEFT, RIGHT)	See Contrast table(2)
	56	Button(A, BAND)	YAC5021
	57	Button(DETACH)	YAC5023
	58	Cover	YNS5021
	59	Keyboard Unit	See Contrast table(2)
	60	LCD(LCD1801)	See Contrast table(2)
	61	Connector(CN1801)	CKS3580
	62	Sheet	CNM7932
	63	Lens	CNV7060
	64	Connector	CNV7369
	65	Holder	YNC5001
	66	Lighting Conductor	YNV5001
	67	Connector	YNV5003
	68	Grille Unit	See Contrast table(2)
	69	Sheet	See Contrast table(2)
	70	Transistor(Q911, 921, 991)	2SD2396
	71	IC(IC302)	PAL007A

(2) CONTRAST TABLE

DEH-1650/XU/ES, DEH-1650B/XU/ES and DEH-1650/XU/CN are constructed the same except for the following:

Mark	NO	Description	DEH-1650/XU/ES	DEH-1650B/XU/ES	DEH-1650/XU/CN
	27	Panel	YNS5022	YNS5022	YNS5029
	28	Tuner Amp Unit	YWM5011	YWM5017	YWM5021
	44	Detach Grille Assy	YXA5020	YXA5022	YXA5024
	49	Button(VOLUME+)	YAC5006	YAC5006	YAC5005
	50	Button(VOLUME-)	YAC5009	YAC5009	YAC5008
	54	Button(UP, DOWN)	YAC5016	YAC5016	YAC5015
	55	Button(LEFT, RIGHT)	YAC5019	YAC5019	YAC5018
	59	Keyboard Unit	YWM5012	YWM5018	YWM5022
	60	LCD(LCD1801)	CAW1801	YAW5003	YAW5004
	68	Grille Unit	YXA5003	YXA5008	YXA5011
	69	Sheet	Not used	CNM7881	Not used

A

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C

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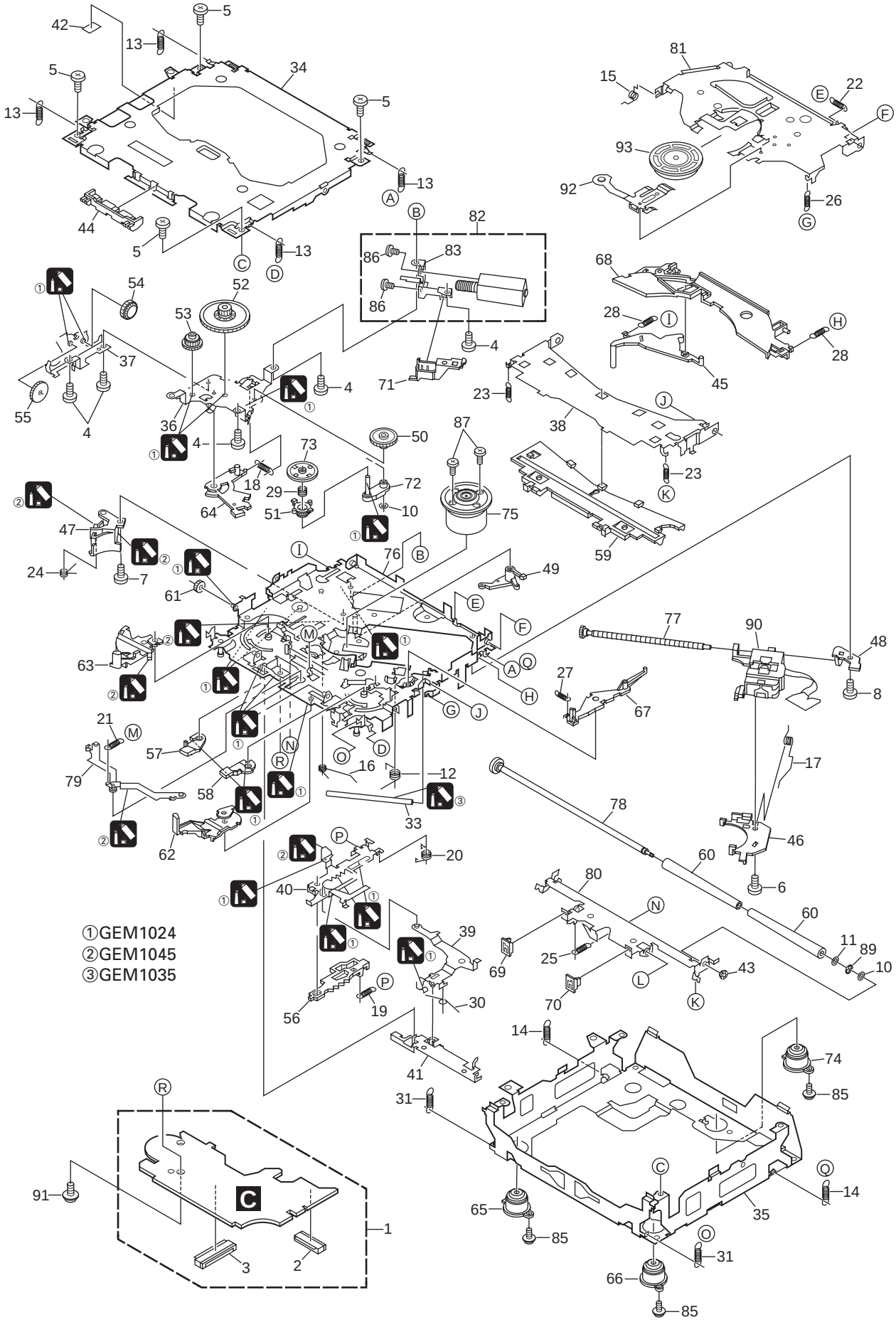
2.3 CD MECHANISM MODULE

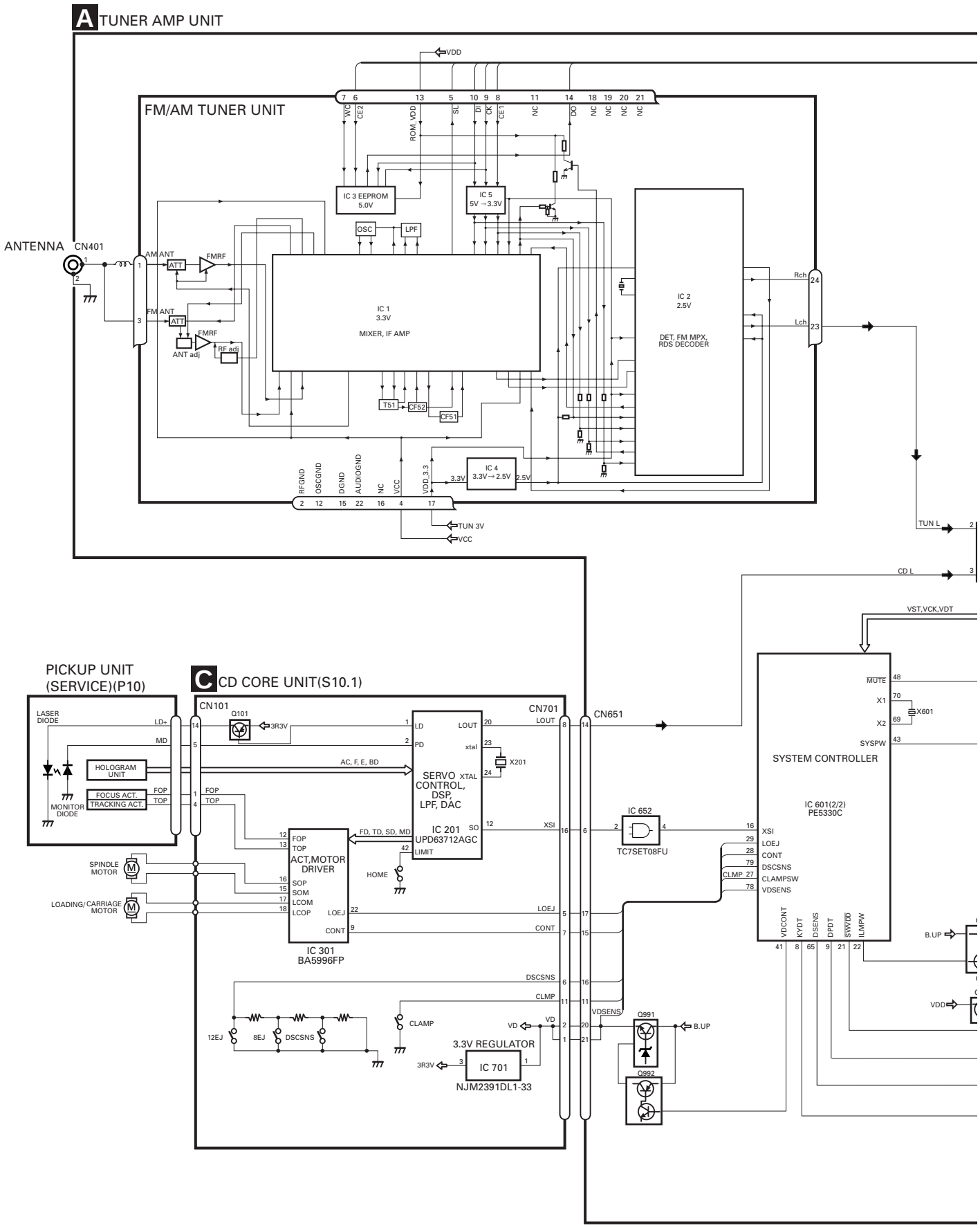


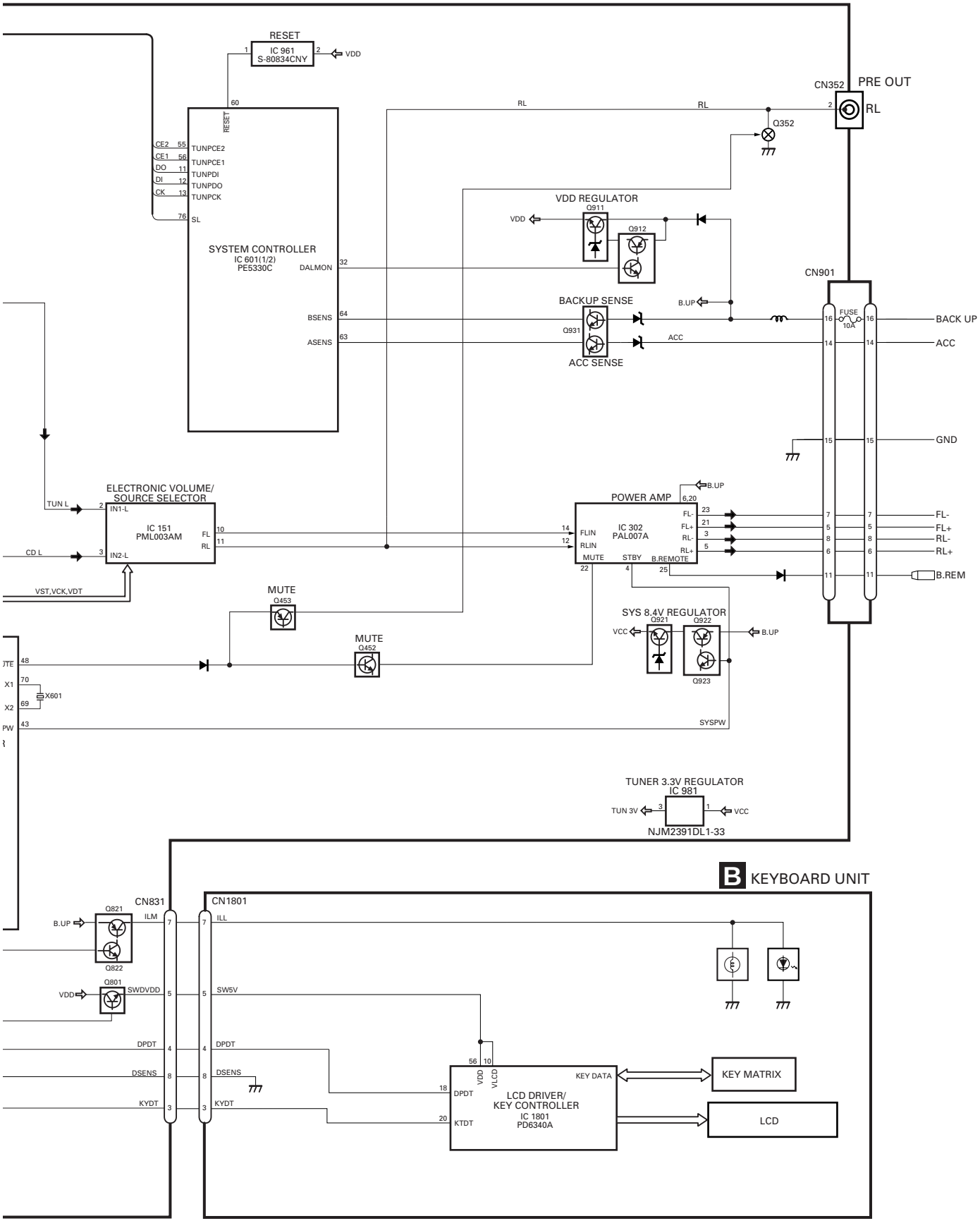
CD MECHANISM MODULE SECTION PARTS LIST

Mark No.	Description	Part No.
1	CD Core Unit(S10.1)	CWX2947
2	Connector(CN101)	CKS4182
3	Connector(CN701)	CKS4188
4	Screw	BMZ20P035FTC
5	Screw	BSZ20P040FTC
6	Screw(M2x4)	CBA1362
7	Screw(M2x3)	CBA1511
8	Screw(M2x3)	CBA1527
9	•••••	
10	Washer	CBF1038
11	Washer	CBF1060
12	Spring	CBH2390
13	Spring	CBH2606
14	Spring	CBH2607
15	Spring	CBH2608
16	Spring	CBH2609
17	Spring	CBH2610
18	Spring	CBH2735
19	Spring	CBH2612
20	Spring	CBH2613
21	Spring	CBH2614
22	Spring	CBH2615
23	Spring	CBH2616
24	Spring	CBH2617
25	Spring	CBH2620
26	Spring	CBH2621
27	Spring	CBH2641
28	Spring	CBH2642
29	Spring	CBH2643
30	Spring	CBH2659
31	Spring	CBH2688
32	•••••	
33	Shaft	CLA4441
34	Frame	CNC9962
35	Frame	CNC9963
36	Bracket	CNC9966
37	Bracket	CND1895
38	Arm	CNC9968
39	Arm	CND1909
40	Lever	CND2032
41	Lever	CNC9984
42	Sheet	CNM8134
43	Collar	CNV7798
44	Guide	CNV7799
45	Arm	CNV7800
46	Rack	CNV7199
47	Holder	CNV7201
48	Holder	CNV7202
49	Arm	CNV7203
50	Gear	CNV7207
51	Gear	CNV7208
52	Gear	CNV7209
53	Gear	CNV7210
54	Gear	CNV7211
55	Gear	CNV7212
56	Rack	CNV7214
57	Arm	CNV7215
58	Arm	CNV7216
59	Guide	CNV7217
60	Roller	CNV7218
61	Gear	CNV7219
62	Arm	CNV7221
63	Arm	CNV7220
64	Arm	CNV7222
65	Damper	CNV7313
66	Damper	CNV7314
67	Arm	CNV7341
68	Arm	CNV7342
69	Guide	CNV7360
70	Guide	CNV7361
71	Holder	CNV7437
72	Arm	CNV7805
73	Gear	CNV7595
74	Damper	CNV7618
75	Motor Unit(M1)	CXB6007
76	Chassis Unit	CXC2318
77	Screw Unit	CXB8729
78	Gear Unit	CXC2397
79	Arm Unit	CXC2316
80	Arm	CND1896
81	Arm	CND1894
82	Motor Unit(M2)	CXB8933
83	Bracket	CNC9985
84	•••••	
85	Screw(M2x5)	EBA1028
86	Screw	JFZ20P020FTC
87	Screw	JGZ17P022FTC
88	•••••	
89	Washer	YE20FTC
90	Pickup Unit(P10)(Service)	CXX1647
91	Screw	IMS26P030FTC
92	Spring	CBL1635
93	Clamper	CNV7197

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

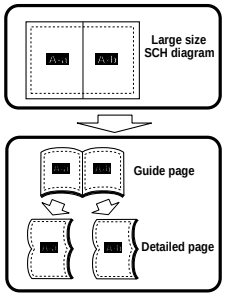
3.1 BLOCK DIAGRAM

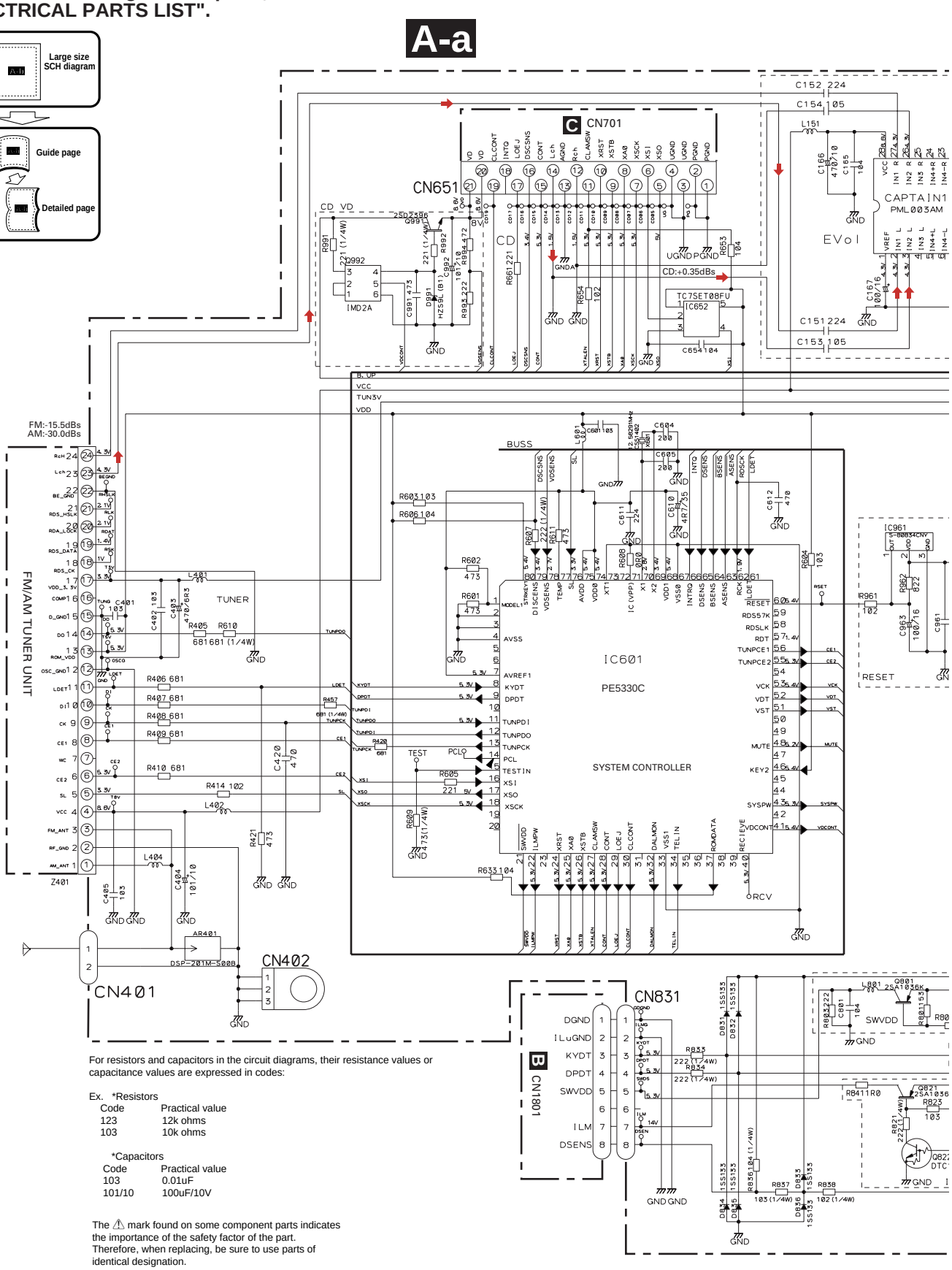



RESET
IC 961
S-80834CNY
VDD
CN352
PRE OUT
RL
Q352
VDD REGULATOR
Q911
Q912
SYSTEM CONTROLLER
IC 601(1/2)
PE5330C
CE2
CE1
DO
DI
CK
TUNPCE2
TUNPCE1
TUNPDI
TUNPDO
TUNPCK
SL
DALMON
BSENS
ASENS
BACKUP SENSE
Q931
ACC SENSE
B.UP
ACC
CN901
FUSE
10A
BACK UP
GND
ELECTRONIC VOLUME/
SOURCE SELECTOR
IC 151
PML003AM
TUN L
CD L
VST,VCK,VDT
IN1-L
IN2-L
FL
RL
POWER AMP
IC 302
PAL007A
FLIN
RLIN
MUTE
STBY
B.REMOTE
FL-
FL+
RL-
RL+
B.REM
MUTE
Q453
Q452
SYS 8.4V REGULATOR
Q921
Q922
Q923
VCC
SYSPW
X601
TUNER 3.3V REGULATOR
IC 981
TUN 3V
NJM2391DL1-33
B KEYBOARD UNIT
CN831
CN1801
Q821
Q822
Q801
ILM
ILL
SWDVDD
SW5V
DPDT
DSENS
KYDT
LCD DRIVER/
KEY CONTROLLER
IC 1801
PD6340A
KEY DATA
KEY MATRIX
LCD

3.2 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to " EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".





For resistors and capacitors in the circuit diagrams, their resistance values or capacitance values are expressed in codes:

Ex. *Resistors

Code	Practical value
123	12k ohms
103	10k ohms

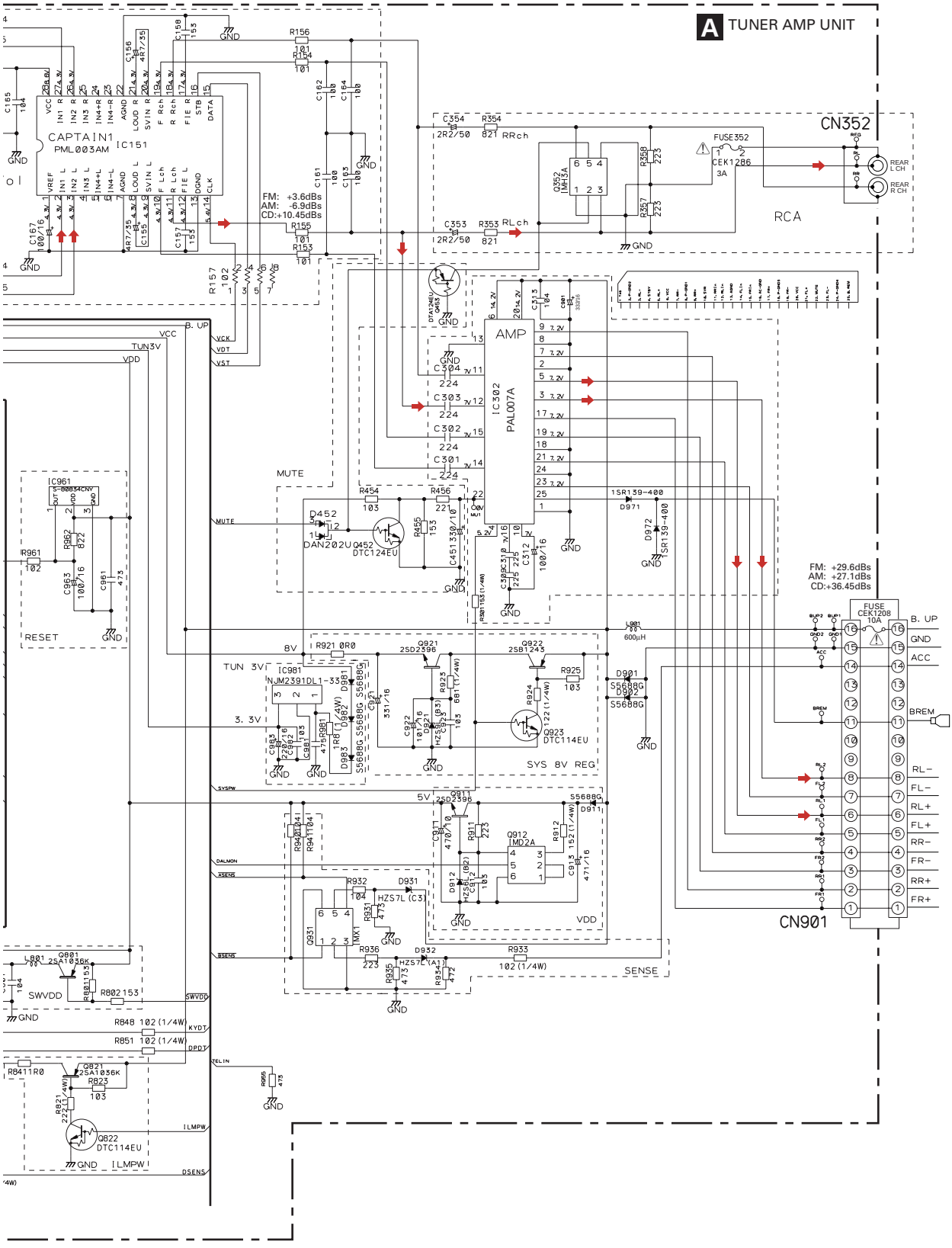
*Capacitors

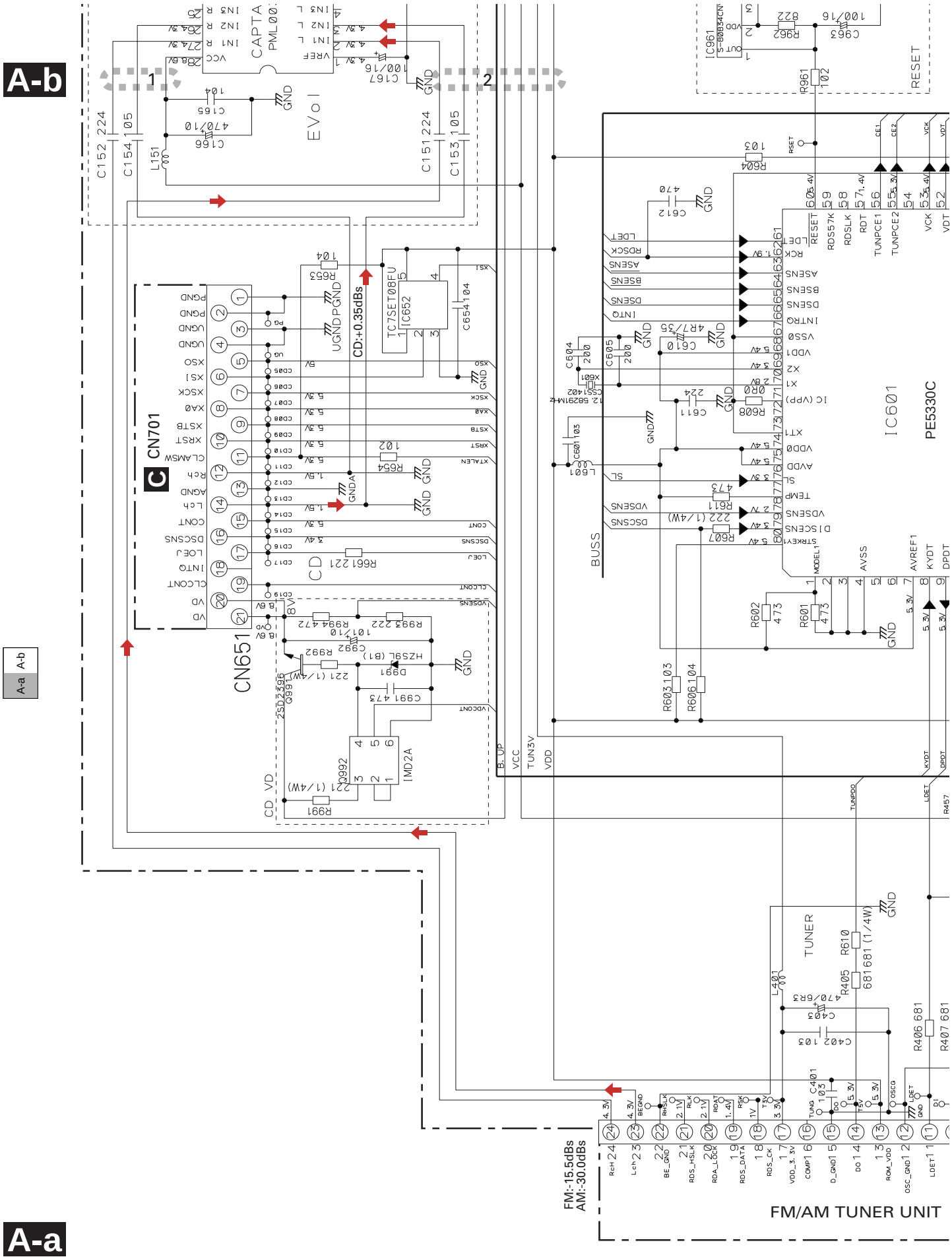
Code	Practical value
103	0.01uF
101/10	100uF/10V

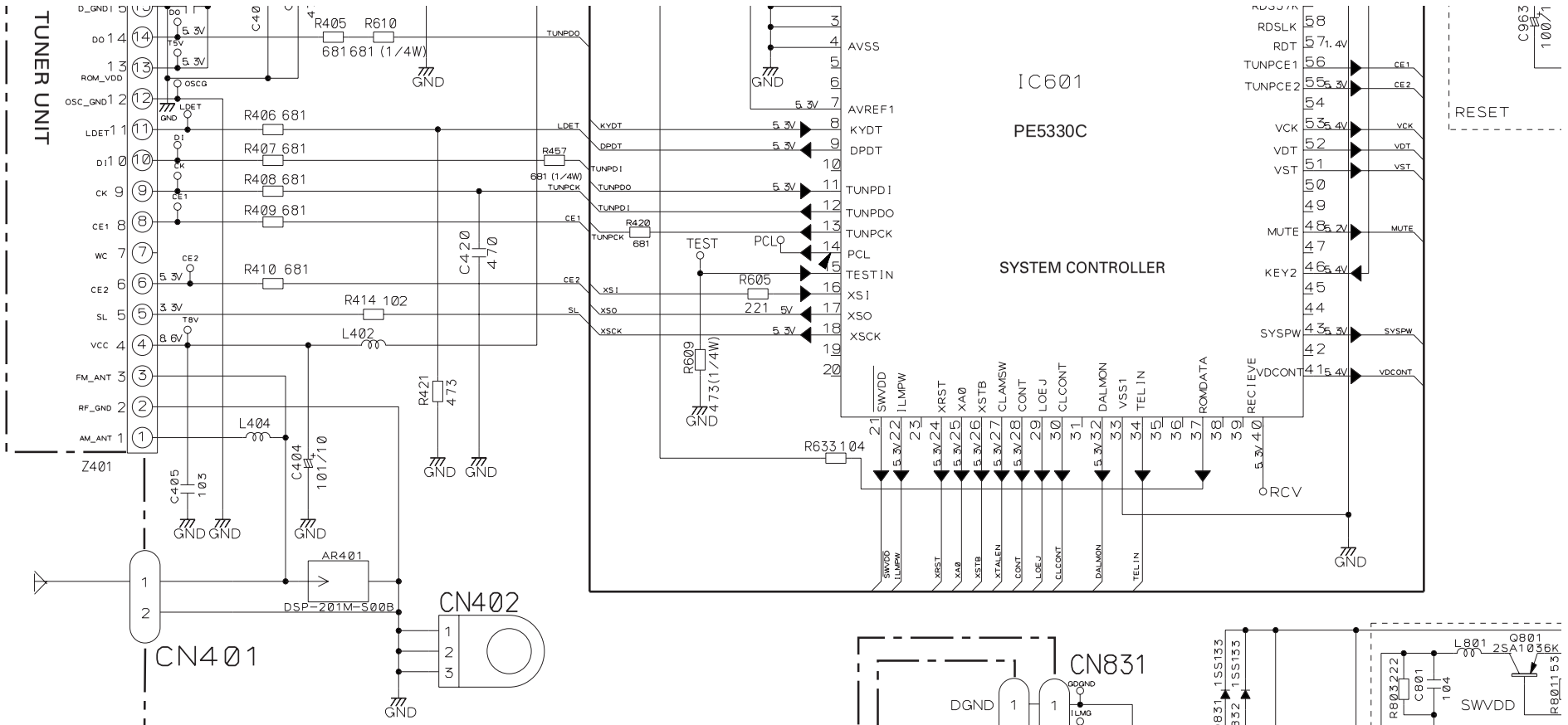
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

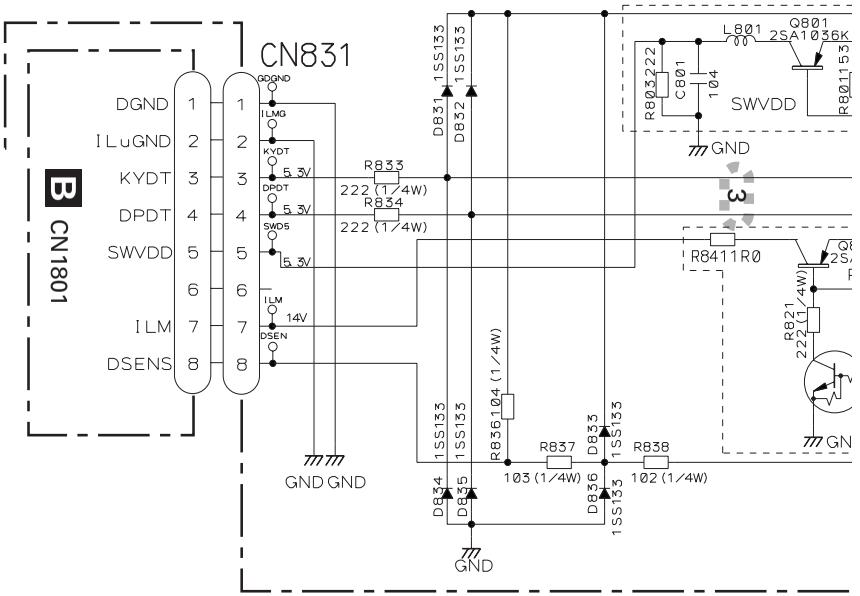
A-b

A TUNER AMP UNIT




A-b
A-a
CN651
CN701
IC601
PE5330C
BUSS
TUNER
EVOL
CAPTA
PML00
RESET
CD
CD VD
FM:-15.5dBs
AM:-30.0dBs
FM/AM TUNER UNIT





For resistors and capacitors in the circuit diagrams, their resistance values or capacitance values are expressed in codes:

Ex. *Resistors

Code	Practical value
123	12k ohms
103	10k ohms

*Capacitors

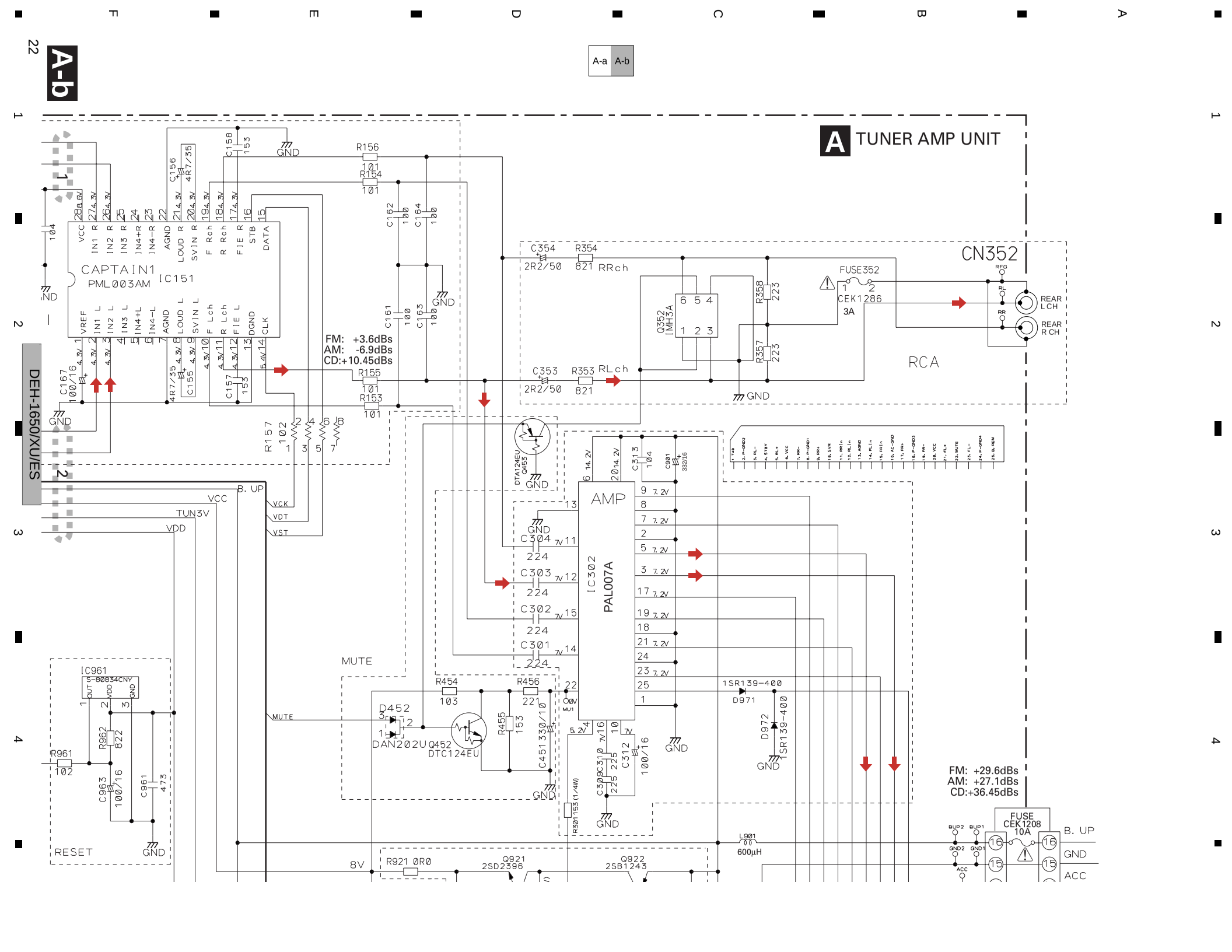
Code	Practical value
103	0.01uF
101/10	100uF/10V

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

A-a A-b

A-a

A-b


A-b
A-a
A-b
A TUNER AMP UNIT
DEH-1650/XU/ES
CAPTAIN1
PML003AM
IC151
CN352
RCA
REAR L CH
REAR R CH
FUSE352
CEK1286
3A
RRch
RLch
C354
R354
2R2/50
821
C353
R353
R358
R357
223
Q352
IMH3A
FM: +3.6dBs
AM: -6.9dBs
CD:+10.45dBs
R155
R153
R157
DTA124EU
Q453
AMP
IC302
PAL007A
C304
C303
C302
C301
224
MUTE
D452
DAN202U
Q452
DTC124EU
R454
R456
R455
C451
330/10
IC961
S-80834CNY
R961
R962
822
C963
C961
473
RESET
B. UP
VCC
TUN3V
VDD
VCK
VDT
VST
8V
R921 0R0
Q921
2SD2396
Q922
2SB1243
1SR139-400
D971
D972
L901
600µH
FUSE
CEK1208
10A
GND
ACC
FM: +29.6dBs
AM: +27.1dBs
CD:+36.45dBs

B. UP
GND
ACC
BREM
RL−
FL−
RL+
FL+
RR−
FR−
RR+
FR+
FUSE
CEK1208
10A
AM: +27.1dBs
CD:+36.45dBs
CN901
SENSE
VDD
SYS 8V REG
TUN 3V
3. 3V
8V
5V
RESET
SWVDD
ILMPW
DSENS
KYDT
DPDT
TEL IN
DALMON
ASENS
BSENS
SYSPW
GND

3.3 KEYBOARD UNIT

For resistors and capacitors in the circuit diagrams, their resistance values or capacitance values are expressed in codes:

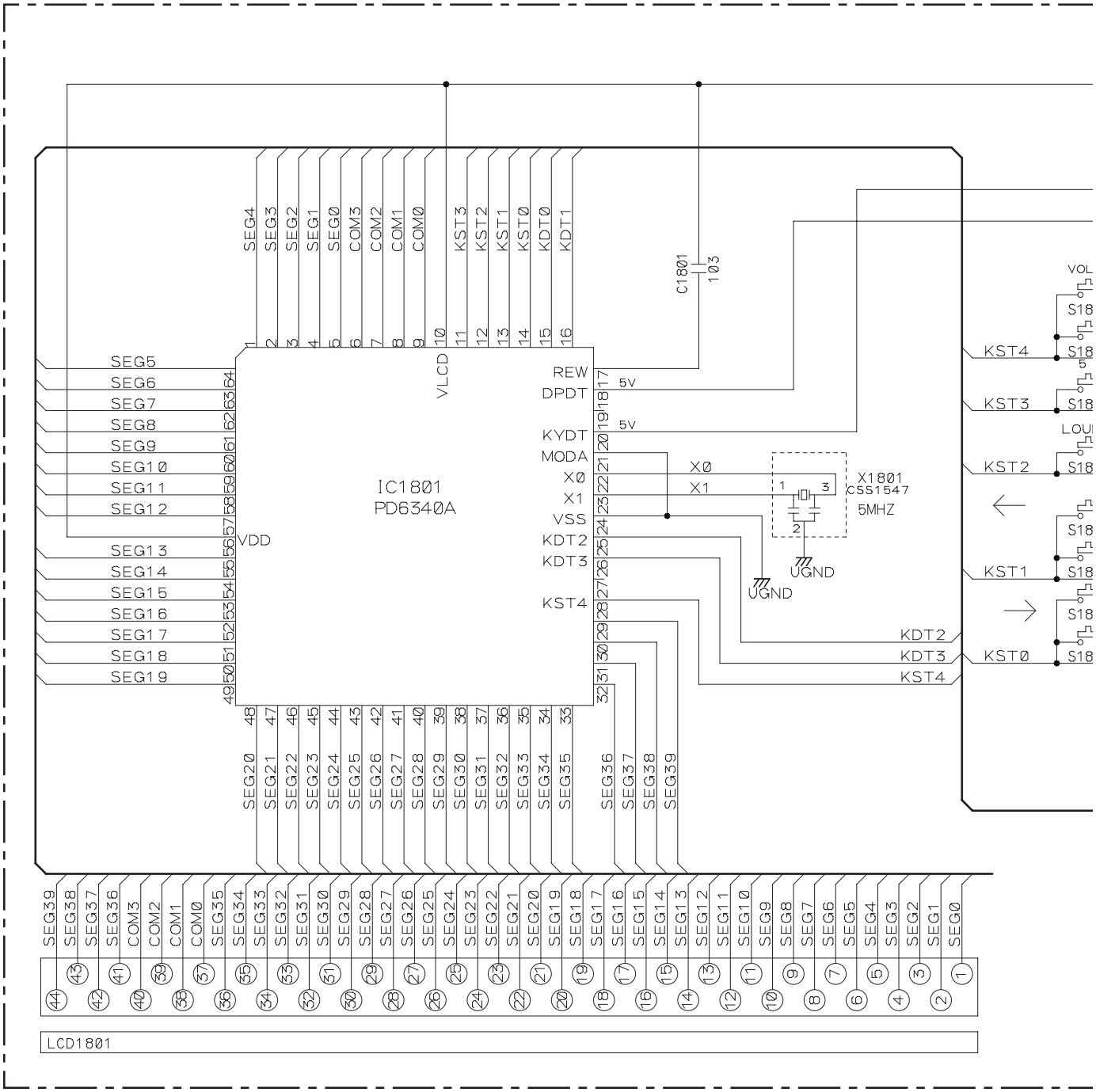
Ex. *Resistors

Code	Practical value
123	12k ohms
103	10k ohms

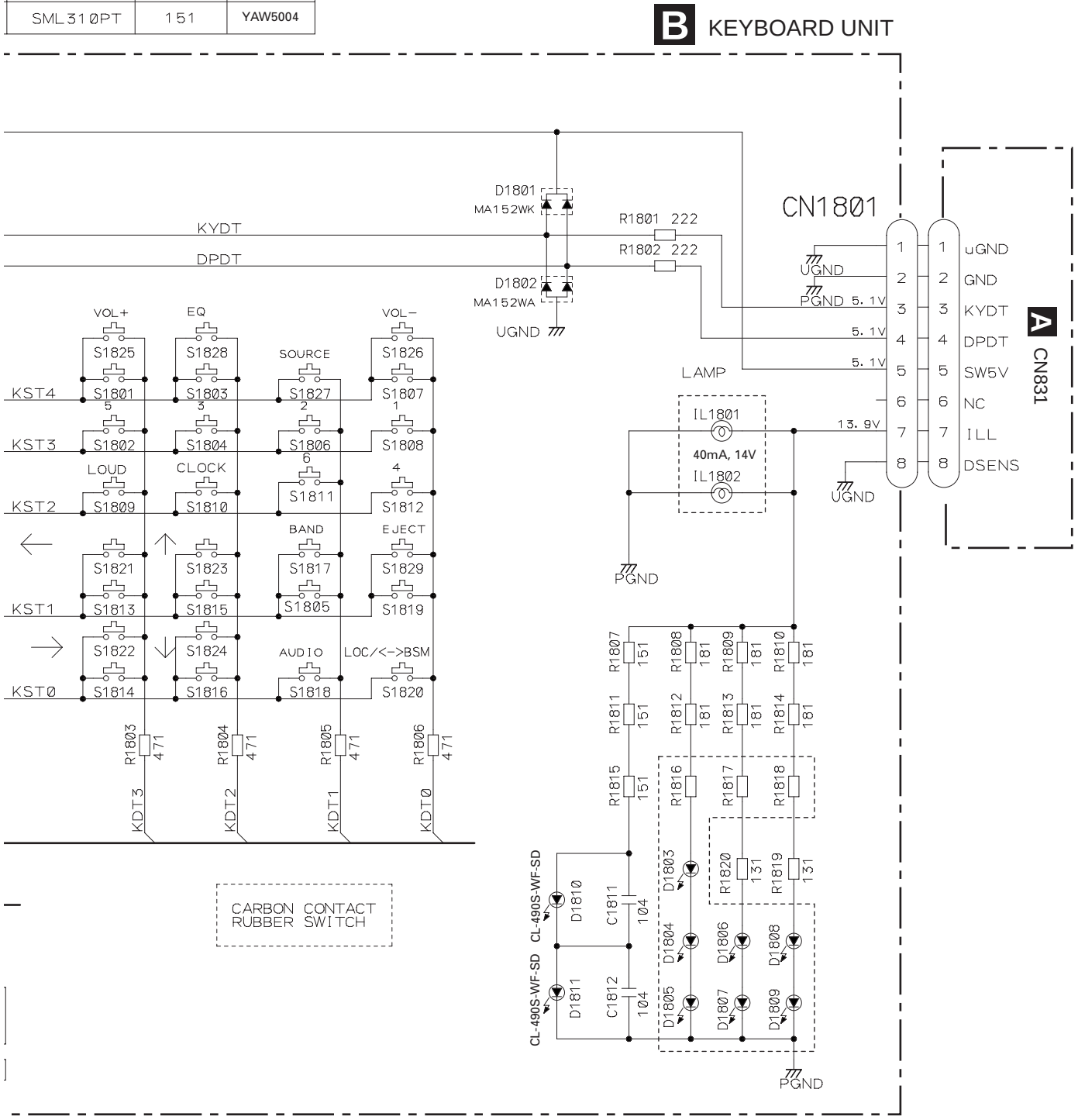
*Capacitors

Code	Practical value
103	0.01uF
101/10	100uF/10V

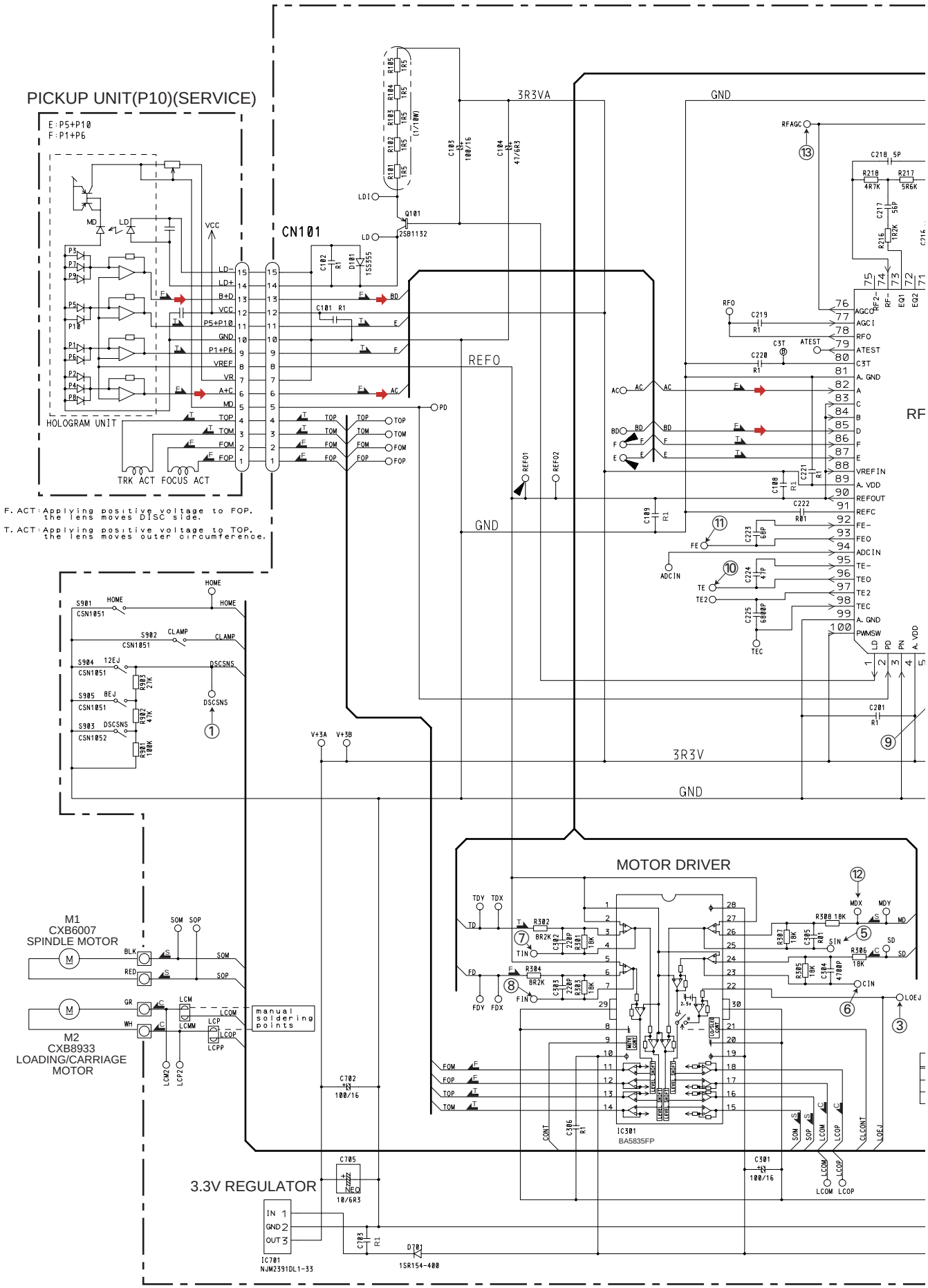
	ILM COLOUR	IL1801,1802	D1803-1809
DEH-1650/XU/ES	GREEN (PG)	CEL1651	SML310PT
DEH-1650B/XU/ES	VW RED (SR)	CEL1662	SML310VT
DEH-1650/XU/CN	GREEN (PG)	CEL1651	SML310PT



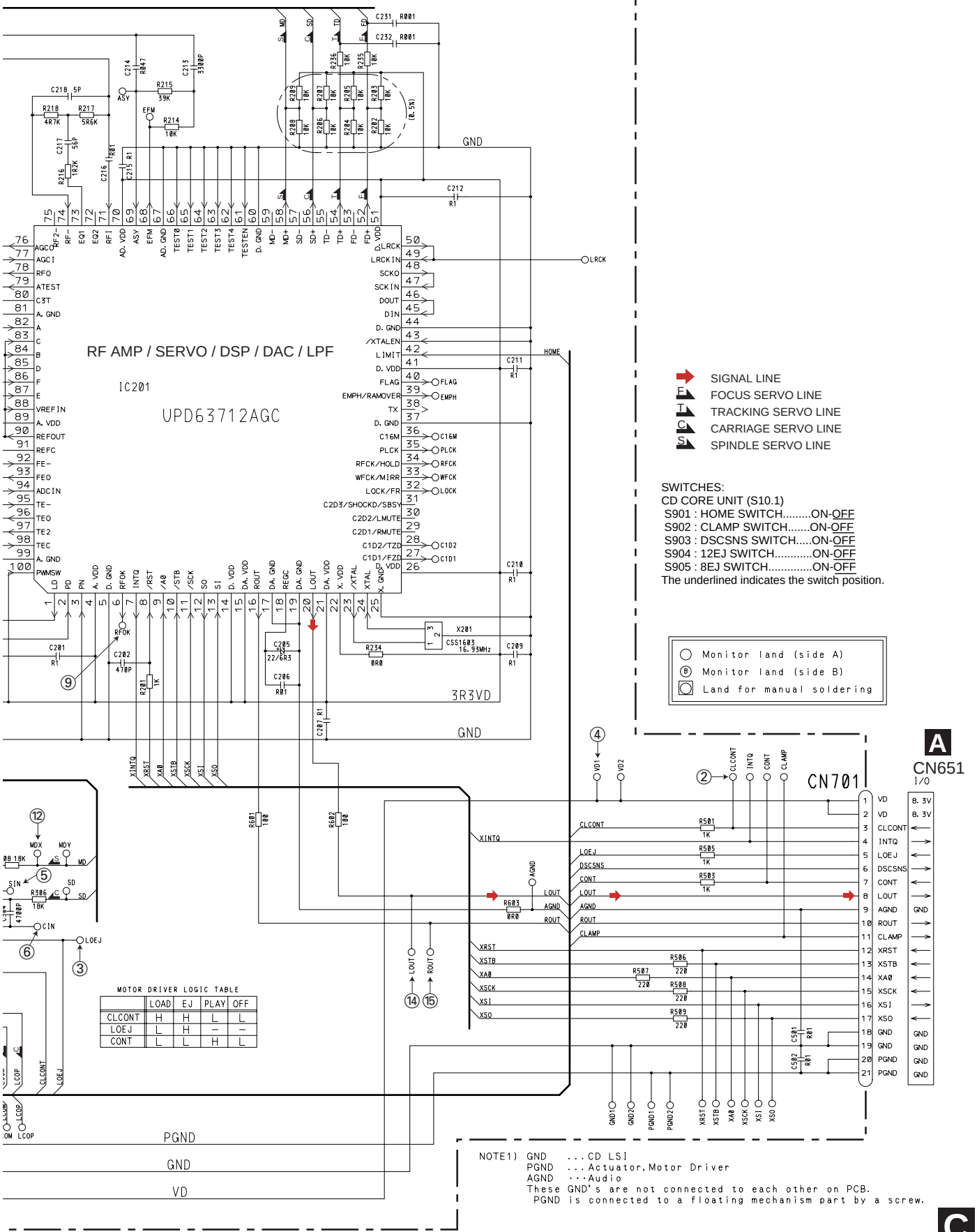
D1803-1809	R1816-1818	LCD1801
SML310PT	151	CAW1801
SML310VT	181	YAW5003
SML310PT	151	YAW5004



3.4 CD MECHANISM MODULE



C CD CORE UNIT(S10.1)

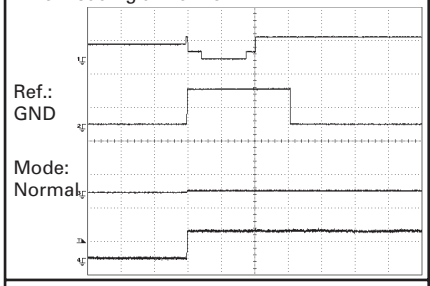


● Waveforms

Note : 1. The encircled numbers denote measuring points in the circuit diagram.
2. Reference voltage REFO1(1.65V)

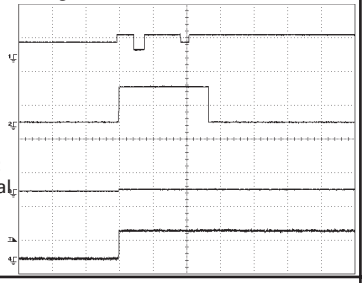
① DSCSNS 5V/div 500ms/div
② CLCONT 5V/div
③ LOEJ 5V/div
④ VD 10V/div

When loading a 12cm CD



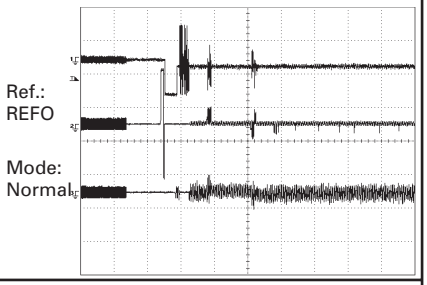
① DSCSNS 5V/div 500ms/div
② CLCONT 5V/div
③ LOEJ 5V/div
④ VD 10V/div

When loading an 8cm CD



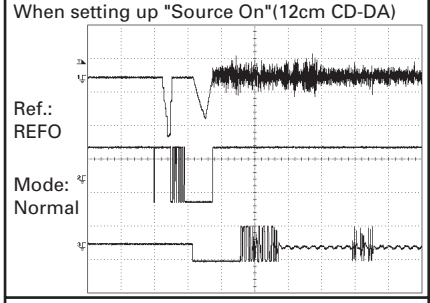
⑤ SIN 1V/div 2s/div
⑥ CIN 500mV/div
⑦ TIN 500mV/div

When setting up after loading a 12cm CD-DA disc



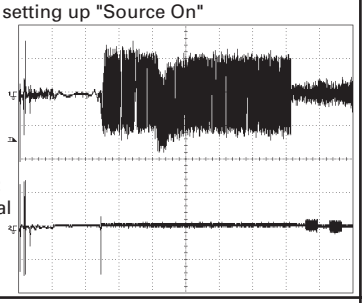
⑧ FIN 200mV/div 500ms/div
⑨ RFOK 2V/div
⑤ SIN 2V/div

When setting up "Source On"(12cm CD-DA)



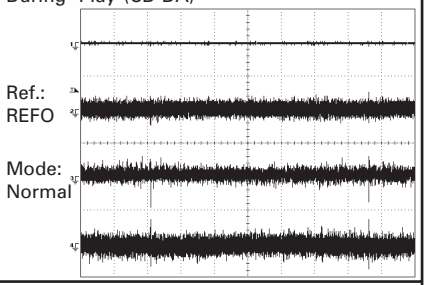
⑩ TE 500mV/div 200ms/div
⑪ FE 500mV/div

When setting up "Source On"



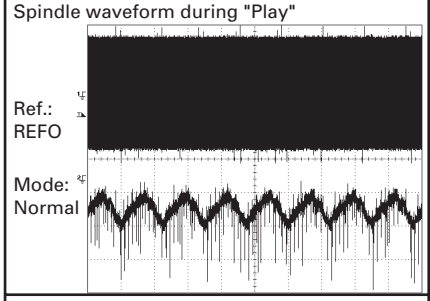
⑪ FE 500mV/div 20ms/div
⑧ FIN 500mV/div
⑩ TE 500mV/div
⑦ TIN 500mV/div

During "Play"(CD-DA)



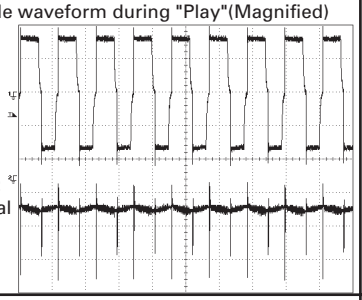
⑫ MDX 500mV/div 5ms/div
⑤ SIN 1V/div

Spindle waveform during "Play"



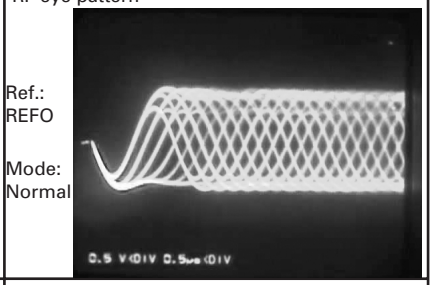
⑫ MDX 500mV/div 5µs/div
⑤ SIN 1V/div

Spindle waveform during "Play"(Magnified)



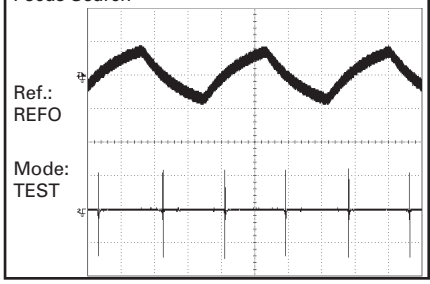
⑬ RFAGC 500mV/div 0.5µs/div

RF eye pattern



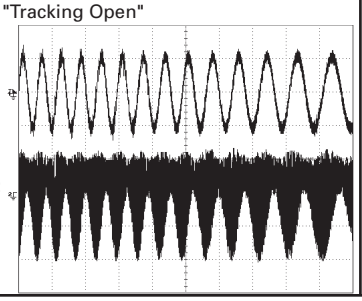
⑧ FIN 500mV/div 200ms/div
⑪ FE 500mV/div

Focus Search



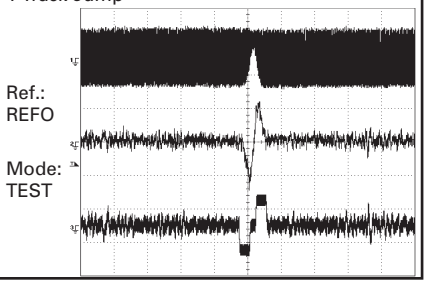
⑩ TE 500mV/div 2ms/div
⑬ RFAGC 500mV/div

When "Tracking Open"



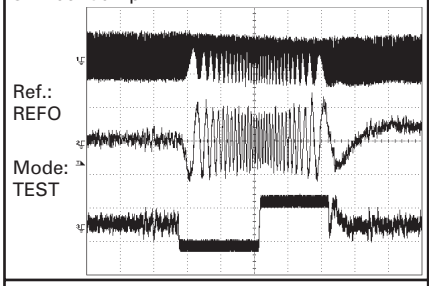
⑬ RFAGC 1V/div 500µs/div
⑩ TE 500mV/div
⑦ TIN 500mV/div

1 Track Jump



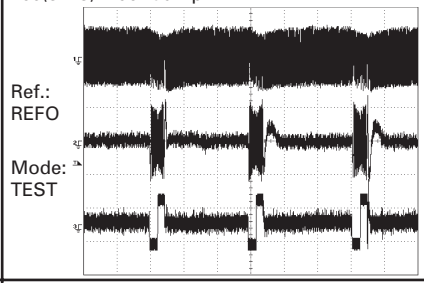
⑬ RFAGC	1V/div	500ms/div
⑩ TE	500mV/div	
⑦ TIN	500mV/div	

32 Track Jump



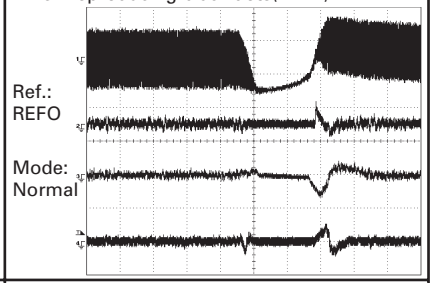
⑬ RFAGC	1V/div	5ms/div
⑩ TE	500mV/div	
⑦ TIN	500mV/div	

100(32x3) Track Jump



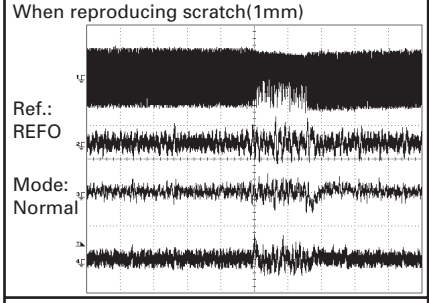
⑬ RFAGC	1V/div	500µs/div
⑦ TIN	1V/div	
⑩ TE	1V/div	
⑧ FIN	1V/div	

When reproducing black dots(1mm)



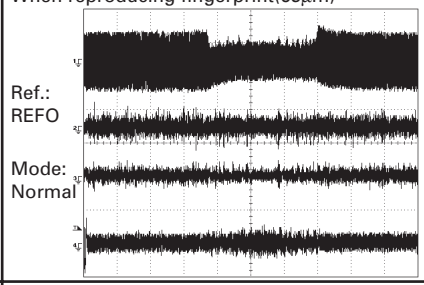
⑬ RFAGC	1V/div	500µs/div
⑩ TE	1V/div	
⑥ CIN	500mV/div	
⑤ SIN	2V/div	

When reproducing scratch(1mm)



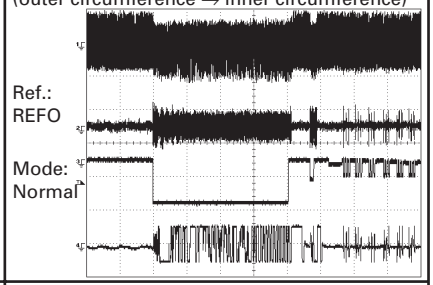
⑬ RFAGC	1V/div	5ms/div
⑩ TE	1V/div	
⑥ CIN	500mV/div	
⑤ SIN	2V/div	

When reproducing fingerprint(65µm)



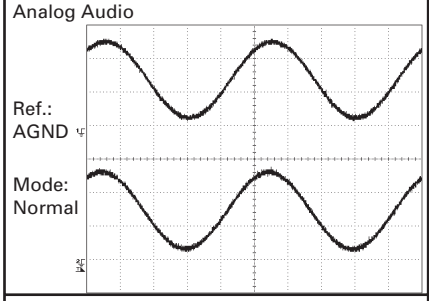
⑬ RFAGC	1V/div	500µs/div
⑩ TE	1V/div	
⑥ CIN	500mV/div	
⑤ SIN	2V/div	

During inside/outside search
(outer circumference → inner circumference)



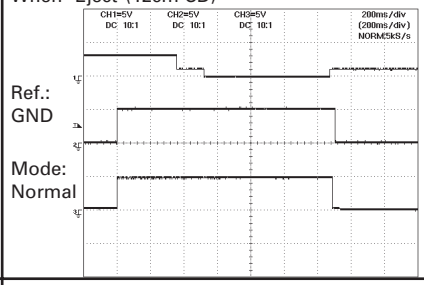
⑭ LOUT	1V/div	200µs/div
⑮ ROUT	1V/div	

Analog Audio



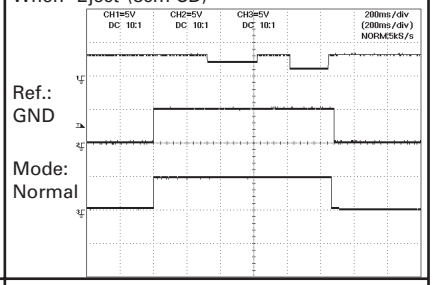
① DSCSNS	5V/div	200ms/div
② CLCONT	5V/div	
③ LOEJ	5V/div	

When "Eject"(12cm CD)



① DSCSNS	5V/div	200ms/div
② CLCONT	5V/div	
③ LOEJ	5V/div	

When "Eject"(8cm CD)

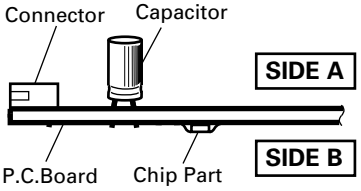


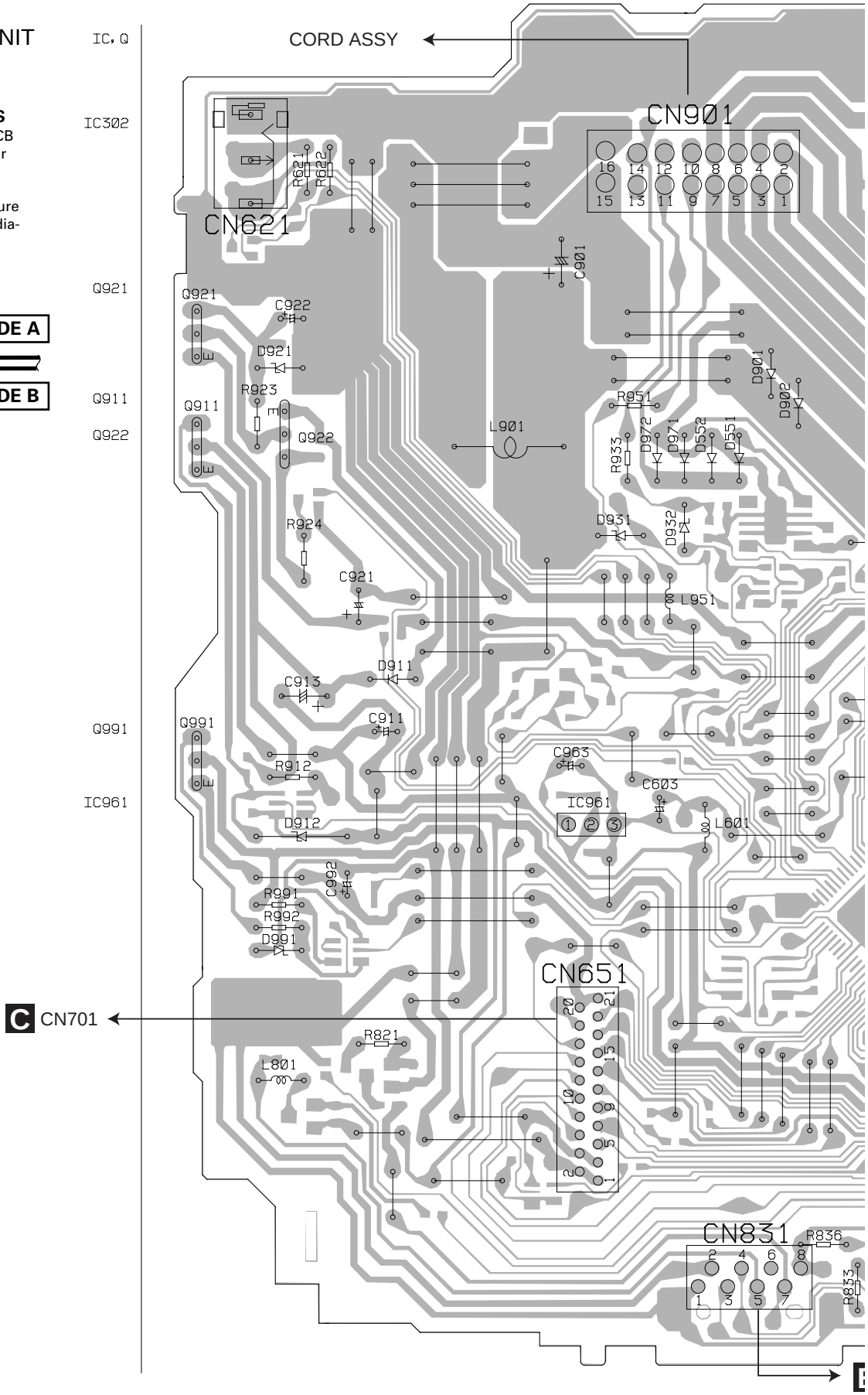
4. PCB CONNECTION DIAGRAM
4.1 TUNER AMP UNIT

A TUNER AMP UNIT

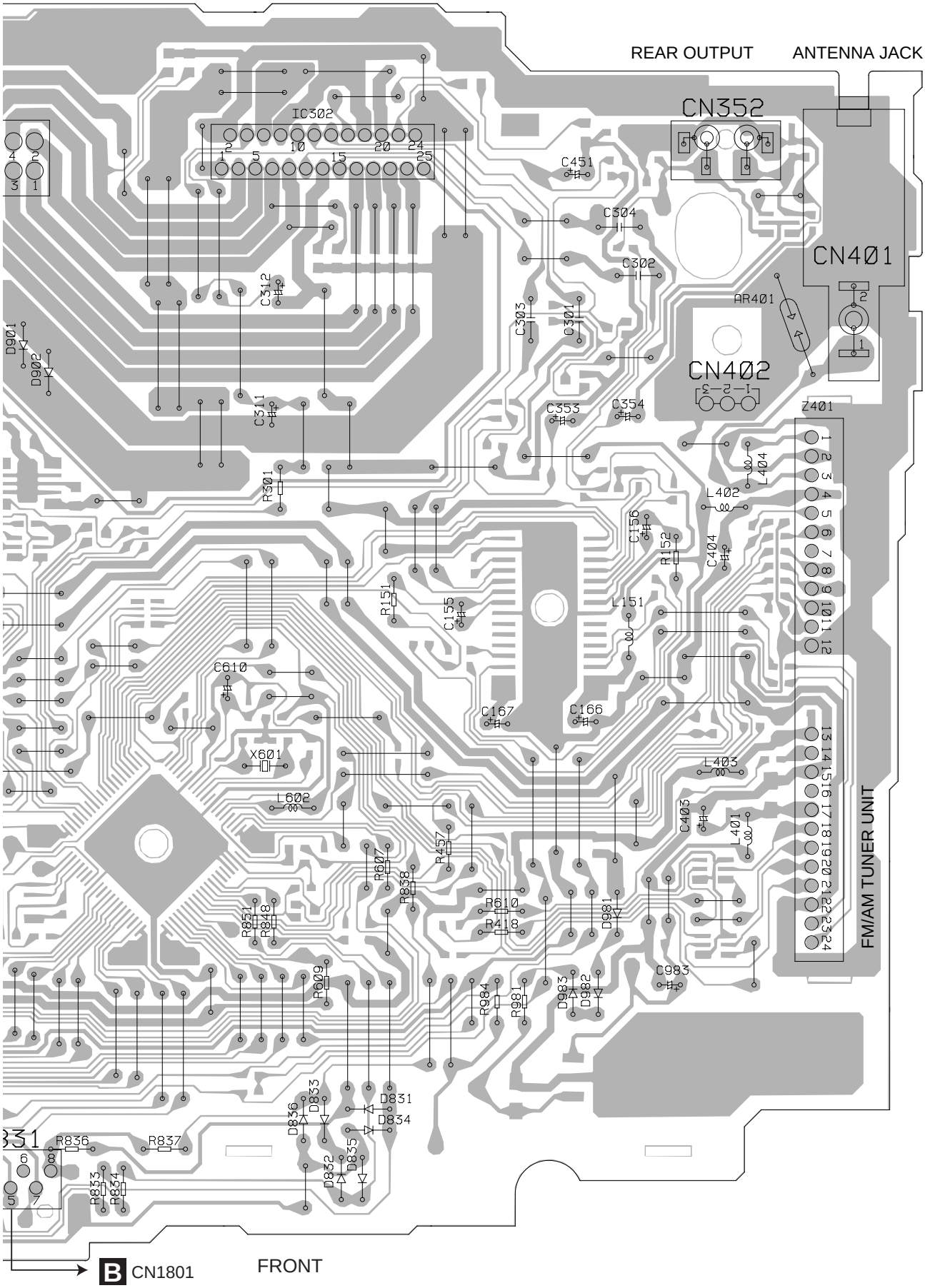
NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination. For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams

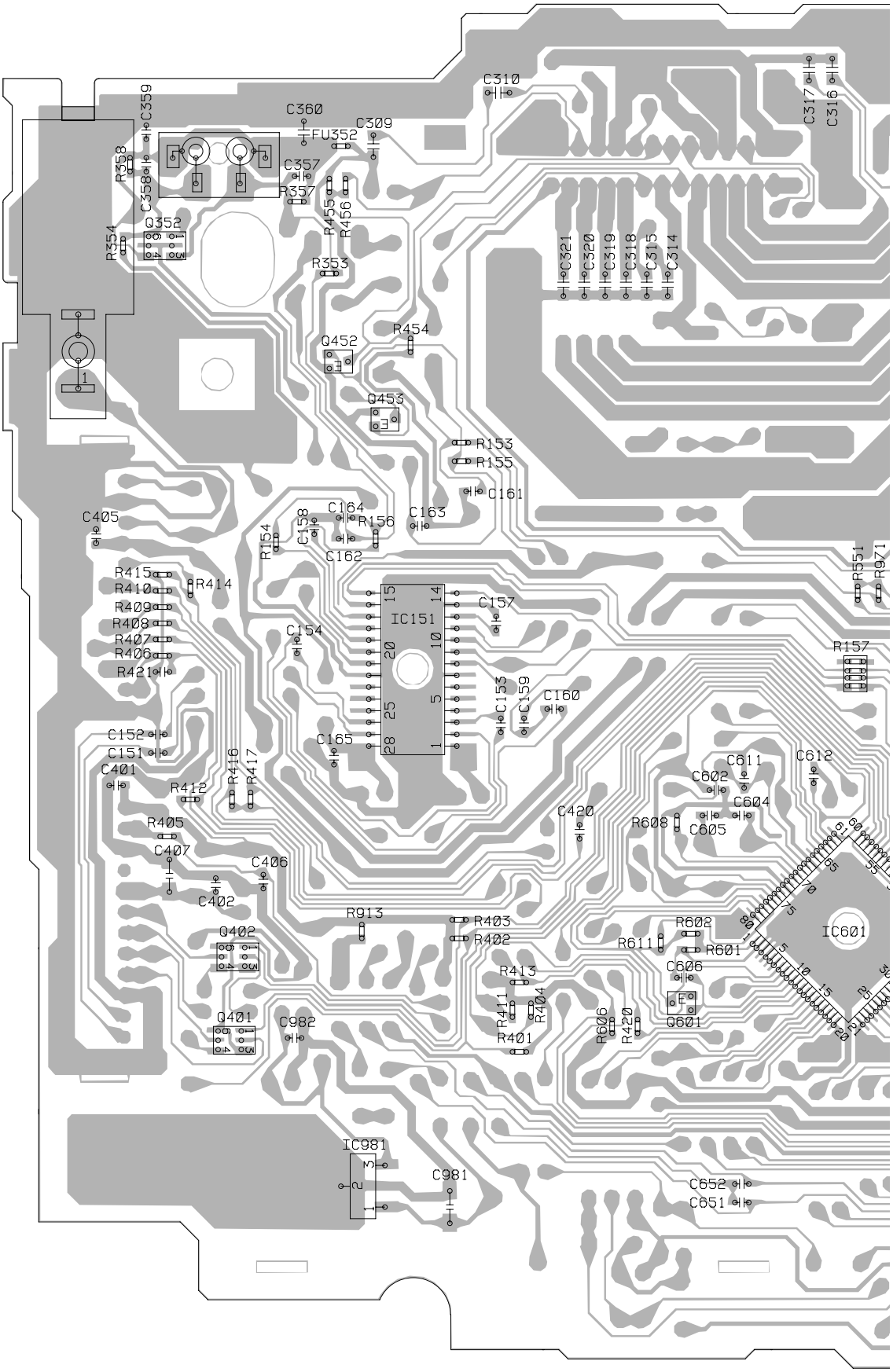




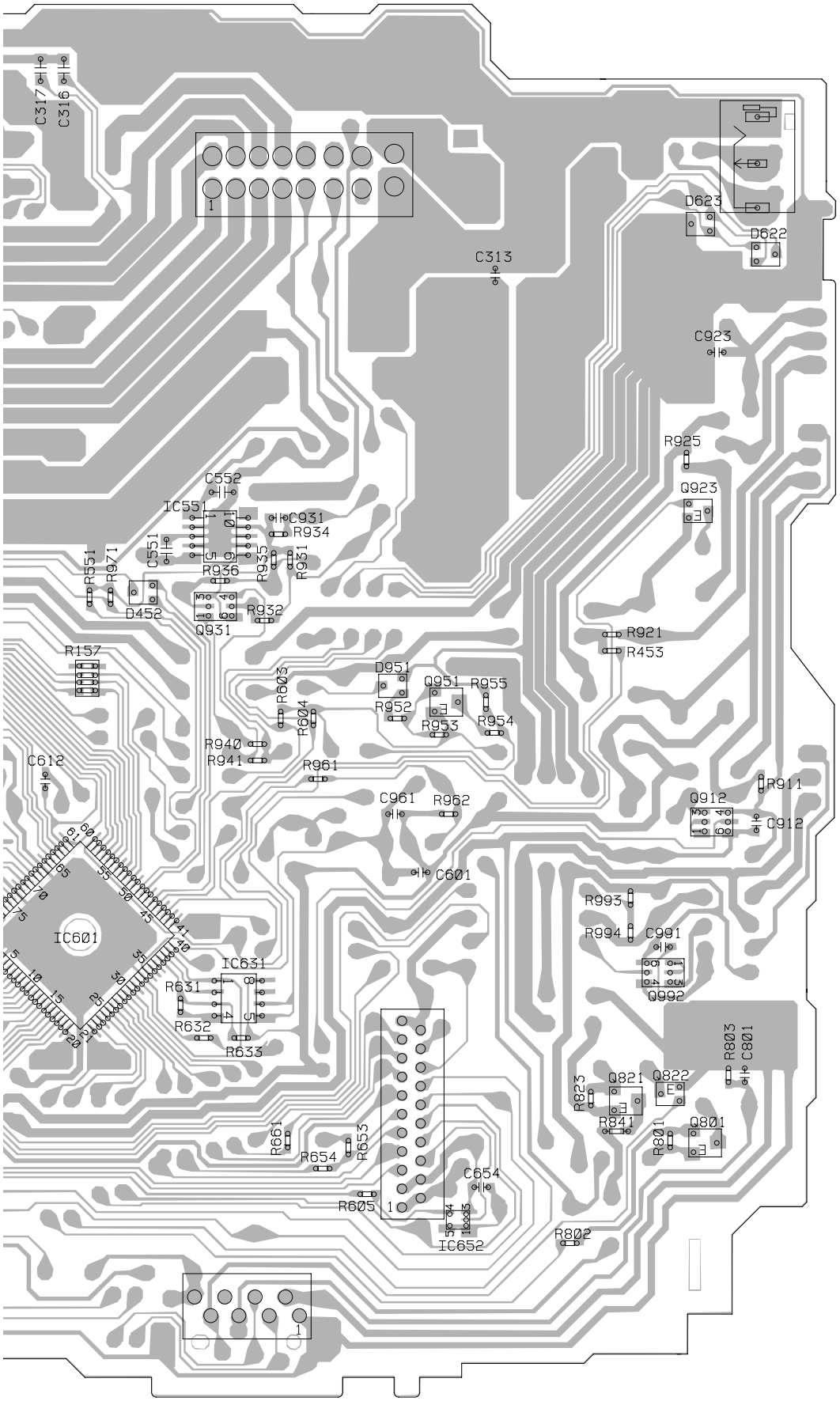
SIDE A


REAR OUTPUT
ANTENNA JACK
CN352
CN401
CN402
IC302
AR401
Z401
FM/AM TUNER UNIT
B CN1801
FRONT

A TUNER AMP UNIT



SIDE B



IC, Q

Q352

Q452

Q453

Q923
IC551

IC151 Q931

Q951

Q912

Q402 IC601
IC631

Q992
Q401
Q601

Q821 Q822

Q801

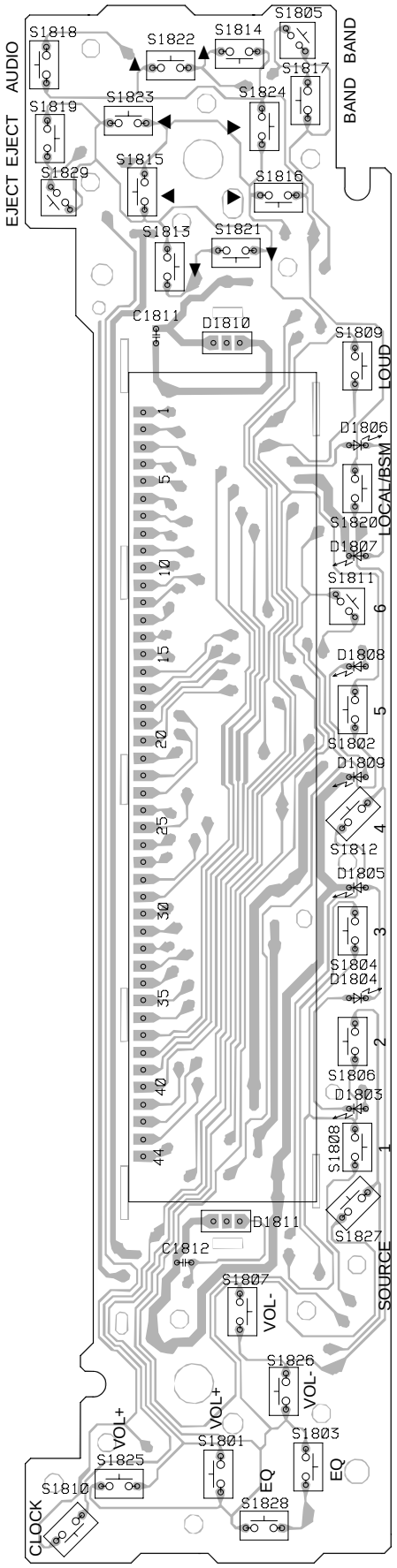
IC981

IC652

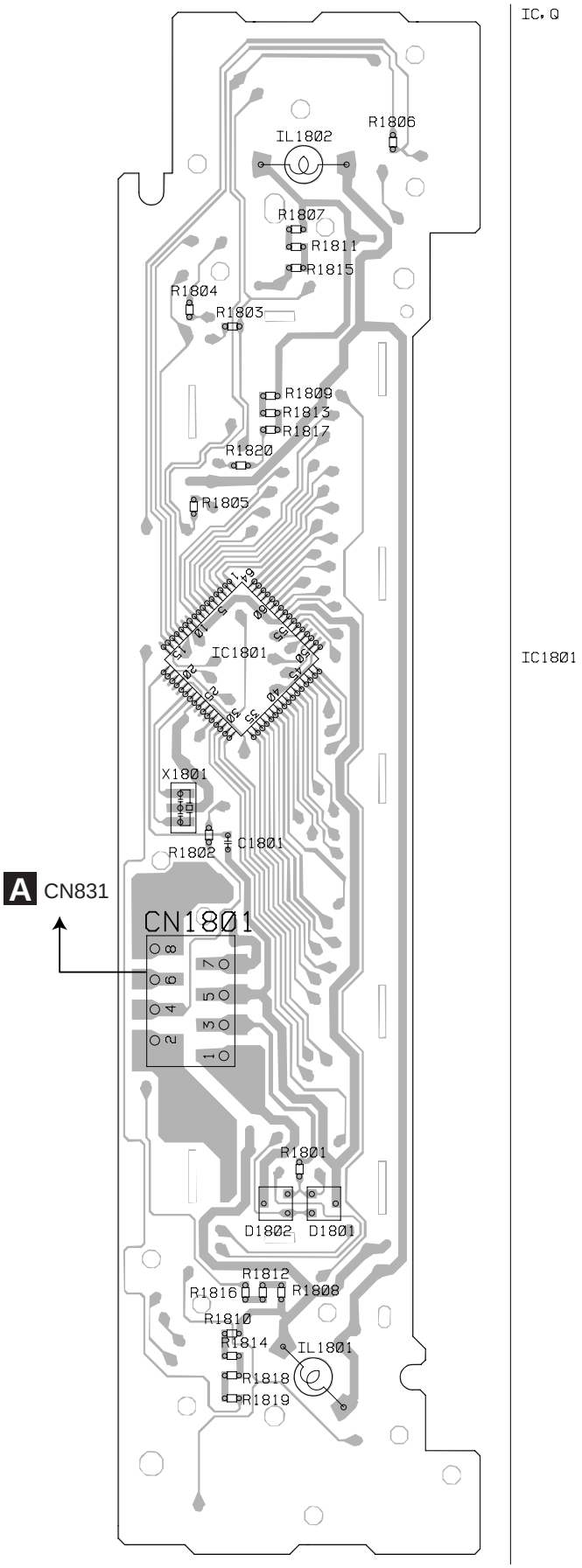
A

4.2 KEYBOARD UNIT

B KEYBOARD UNIT **SIDE A**



B KEYBOARD UNIT **SIDE B**



B

A

B

C

D

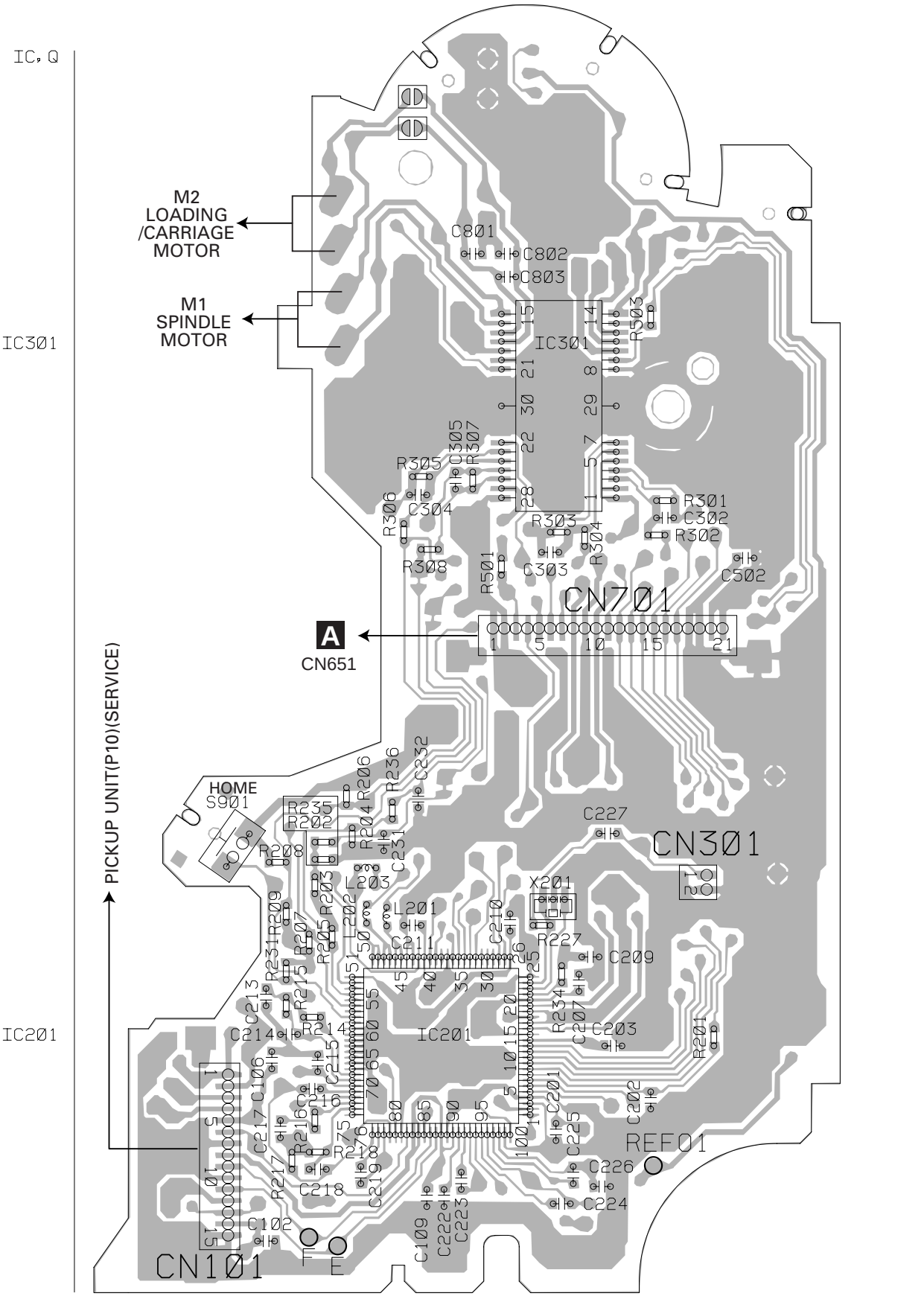
E

F

4.3 CD MECHANISM MODULE

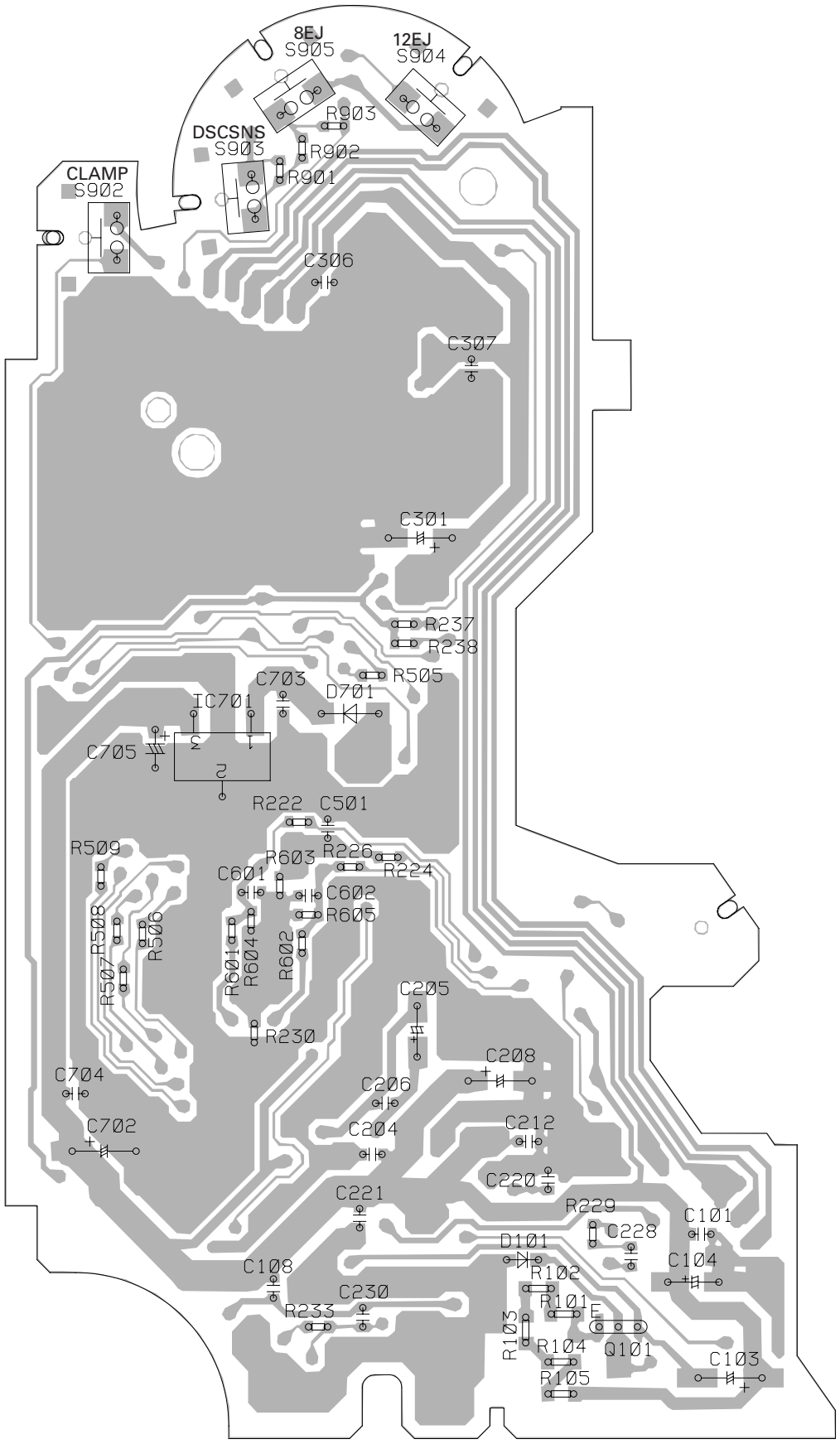
C CD CORE UNIT(S10.1)

SIDE A



C CD CORE UNIT(S10.1)

SIDE B



5. ELECTRICAL PARTS LIST

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*

Chip Resistor

RS1/◯S◯◯◯J,RS1/◯◯S◯◯◯J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

A

Unit Number:YWM5011(DEH-1650/XU/ES)
Unit Number:YWM5017(DEH-1650B/XU/ES)
Unit Number:YWM5021(DEH-1650/XU/CN)
Unit Name:Tuner Amp Unit

MISCELLANEOUS

Circuit Symbol and No.		Part No.
IC 151	IC	PML003AM
IC 302	IC	PAL007A
IC 601	IC	PE5330C
IC 652	IC	TC7SET08FU
IC 961	IC	S-80834CNY
IC 981	IC	NJM2391DL1-33
Q 352	Transistor	IMH3A
Q 452	Transistor	DTC124EU
Q 453	Transistor	DTA124EU
Q 801	Transistor	2SA1036K
Q 821	Transistor	2SA1036K
Q 822	Transistor	DTC114EU
Q 911	Transistor	2SD2396
Q 912	Transistor	IMD2A
Q 921	Transistor	2SD2396
Q 922	Transistor	2SB1243
Q 923	Transistor	DTC114EU
Q 931	Transistor	IMX1
Q 991	Transistor	2SD2396
Q 992	Transistor	IMD2A
D 452	Diode	DAN202U
D 831	Diode	1SS133
D 832	Diode	1SS133
D 833	Diode	1SS133
D 834	Diode	1SS133
D 835	Diode	1SS133
D 836	Diode	1SS133
D 901	Diode	S5688G
D 902	Diode	S5688G
D 911	Diode	S5688G
D 912	Diode	HZS6L(B2)
D 921	Diode	HZS9L(B3)
D 931	Diode	HZS7L(C3)
D 932	Diode	HZS7L(A1)
D 971	Diode	S5688G
D 972	Diode	S5688G
D 981	Diode	S5688G
D 982	Diode	S5688G
D 983	Diode	S5688G
D 991	Diode	HZS9L(B1)
L 151	Inductor	LAU2R2K
L 401	Inductor	LAU1R0K
L 402	Inductor	LAU1R0K
L 404	Ferri-Inductor	LAU4R7K
L 601	Inductor	LAU1R0K
L 801	Inductor	LAU2R2K
L 901	Choke Coil 600µH	CTH1280
X 601	Radiator 12.58291MHz	CSS1402
FU352	Fuse 3A	CEK1286
AR401	Surge Protector	DSP-201M-S00B
	Fuse 10A	CEK1208
	FM/AM Tuner Unit	CWE1646

RESISTORS

Circuit Symbol and No.	Part No.
R 153	RS1/16S101J
R 154	RS1/16S101J
R 155	RS1/16S101J
R 156	RS1/16S101J
R 157	RAB4C102J
R 301	RD1/4PU153J
R 353	RS1/16S821J
R 354	RS1/16S821J
R 357	RS1/16S223J
R 358	RS1/16S223J
R 405	RS1/16S681J
R 407	RS1/16S681J
R 408	RS1/16S681J
R 409	RS1/16S681J
R 410	RS1/16S681J
R 414	RS1/16S0R0J
R 420	RS1/16S681J
R 421	RS1/16S473J
R 454	RS1/16S103J
R 455	RS1/16S153J
R 456	RS1/16S221J
R 457	RD1/4PU681J
R 601	RS1/16S473J
R 602	RS1/16S473J
R 603	RS1/16S103J
R 604	RS1/16S103J
R 605	RS1/16S221J
R 606	RS1/16S104J
R 607	RD1/4PU222J
R 608	RS1/16S0R0J
R 609	RD1/4PU473J
R 610	RD1/4PU681J
R 611	RS1/16S473J

Circuit Symbol and No.	Part No.
R 633	RS1/16S104J
R 653	RS1/16S104J
R 654	RS1/16S102J
R 661	RS1/16S221J
R 801	RS1/16S153J
R 802	RS1/16S153J
R 803	RS1/16S222J
R 821	RD1/4PU222J
R 823	RS1/16S103J
R 833	RD1/4PU222J
R 834	RD1/4PU222J
R 836	RD1/4PU104J
R 837	RD1/4PU103J
R 838	RD1/4PU102J
R 841	RS1/16S1R0J
R 848	RD1/4PU102J
R 851	RD1/4PU102J
R 911	RS1/16S223J
R 912	RD1/4PU152J
R 921	RS1/16S0R0J
R 923	RD1/4PU681J
R 924	RD1/4PU122J
R 925	RS1/16S103J
R 931	RS1/16S473J
R 932	RS1/16S104J
R 933	RD1/4PU102J
R 934	RS1/16S472J
R 935	RS1/16S473J
R 936	RS1/16S223J
R 940	RS1/16S104J
R 941	RS1/16S104J
R 955	RS1/16S473J
R 961	RS1/16S102J
R 962	RS1/16S822J
R 981	RD1/4PU1R8J
R 991	RD1/4PU221J
R 992	RD1/4PU221J
R 993	RS1/16S222J
R 994	RS1/16S472J

CAPACITORS

C 151		CKSRYB224K16
C 152		CKSRYB224K16
C 153		CKSRYB105K10
C 154		CKSRYB105K10
C 155		CEJQ4R7M35
C 156		CEJQ4R7M35
C 157		CKSRYB153K50
C 158		CKSRYB153K50
C 161		CCSRCH100D50
C 162		CCSRCH100D50
C 163		CCSRCH100D50
C 164		CCSRCH100D50
C 165		CKSRYB104K16
C 166		CEJQ470M10
C 167		CEJQ100M16
C 301		CFTNA224J50
C 302		CFTNA224J50
C 303		CFTNA224J50
C 304		CFTNA224J50
C 309		CKSQYB225K10
C 310		CKSQYB225K10
C 312		CEJQ100M16
C 313		CKSRYB104K16
C 353		CEJQ2R2M50
C 354		CEJQ2R2M50
C 401		CKSRYB103K50
C 402		CKSRYB103K50
C 403		CEJQ470M6R3
C 404		CEJQ101M10
C 405		CKSRYB103K50
C 420		CCSRCH470J50
C 451		CEJQ330M10
C 601		CKSRYB103K50
C 604		CCSRCH200J50
C 605		CCSRCH200J50
C 610		CEJQ4R7M35
C 611		CKSRYB224K16
C 654		CKSRYB104K16
C 801		CKSRYB104K16
C 901	3300µF/16V	CCH1494
C 911		CEJQ470M10
C 912		CKSRYB103K50
C 913	470µF/16V	CCH1331
C 921	330µF/16V	CCH1326
C 922		CEJQ101M16
C 923		CKSRYB103K50
C 961		CKSRYB473K50
C 963		CEJQ100M16
C 981		CKSYB475K10
C 982		CKSRYB103K50
C 983		CEJQ220M16
C 991		CKSRYB473K50
C 992		CEJQ101M10

B

Unit Number:YWM5012(DEH-1650/XU/ES)
Unit Number:YWM5022(DEH-1650/XU/CN)
Unit Name:Keyboard Unit

MISCELLANEOUS

IC 1801	IC	PD6340A
D 1801	Diode	MA152WK
D 1802	Diode	MA152WA
D 1803	LED	SML-310PT
D 1804	LED	SML-310PT
D 1805	LED	SML-310PT
D 1806	LED	SML-310PT
D 1807	LED	SML-310PT
D 1808	LED	SML-310PT
D 1809	LED	SML-310PT
D 1810	LED	CL-490S-WF-SD
D 1811	LED	CL-490S-WF-SD
X 1801	Ceramic Resonator 5.00MHz	CSS1547
IL 1801	Lamp 40mA,14V	CEL1651
IL 1802	Lamp 40mA,14V	CEL1651
LCD1801	LCD(DEH-1650/XU/ES)	CAW1801

Circuit Symbol and No.		Part No.
	LCD(DEH-1650/XU/CN)	YAW5004

RESISTORS

R 1801		RS1/16S222J
R 1802		RS1/16S222J
R 1803		RS1/16S471J
R 1804		RS1/16S471J
R 1805		RS1/16S471J
R 1806		RS1/16S471J
R 1807		RS1/16S151J
R 1808		RS1/16S181J
R 1809		RS1/16S181J
R 1810		RS1/16S181J
R 1811		RS1/16S151J
R 1812		RS1/16S181J
R 1813		RS1/16S181J
R 1814		RS1/16S181J
R 1815		RS1/16S151J
R 1816		RS1/16S151J
R 1817		RS1/16S151J
R 1818		RS1/16S151J
R 1819		RS1/16S131J
R 1820		RS1/16S131J

CAPACITORS

C 1801		CKSRYB103K50
C 1811		CKSRYF104Z25
C 1812		CKSRYF104Z25

B

Unit Number:YWM5018(DEH-1650B/XU/ES)
Unit Name:Keyboard Unit

MISCELLANEOUS

IC 1801	IC	PD6340A
D 1801	Diode	MA152WK
D 1802	Diode	MA152WA
D 1803	LED	SML-310VT
D 1804	LED	SML-310VT
D 1805	LED	SML-310VT
D 1806	LED	SML-310VT
D 1807	LED	SML-310VT
D 1808	LED	SML-310VT
D 1809	LED	SML-310VT
D 1810	LED	CL-490S-WF-SD
D 1811	LED	CL-490S-WF-SD
X 1801	Ceramic Resonator 5.00MHz	CSS1547
IL 1801	Lamp 40mA,14V	CEL1662
IL 1802	Lamp 40mA,14V	CEL1662
LCD1801	LCD	YAW5003

RESISTORS

R 1801		RS1/16S222J
R 1802		RS1/16S222J
R 1803		RS1/16S471J
R 1804		RS1/16S471J
R 1805		RS1/16S471J
R 1806		RS1/16S471J
R 1807		RS1/16S151J
R 1808		RS1/16S181J
R 1809		RS1/16S181J
R 1810		RS1/16S181J
R 1811		RS1/16S151J
R 1812		RS1/16S181J
R 1813		RS1/16S181J
R 1814		RS1/16S181J
R 1815		RS1/16S151J
R 1816		RS1/16S181J
R 1817		RS1/16S181J
R 1818		RS1/16S181J
R 1819		RS1/16S131J
R 1820		RS1/16S131J

CAPACITORS

C 1801		CKSRYB103K50
C 1811		CKSRYF104Z25
C 1812		CKSRYF104Z25

C

Unit Number:CWX2947
Unit Name:CD CORE UNIT(S10.1)

MISCELLANEOUS

IC 201	IC	UPD63712AGC
IC 301	IC	BA5835FP
IC 701	IC	NJM2391DL1-33
Q 101	Transistor	2SB1132
D 101	Diode	1SS355
D 701	Diode	1SR154-400
X 201	Ceramic Resonator 16.934MHz	CSS1603
S 901	Switch(HOME)	CSN1051
S 902	Switch(CLAMP)	CSN1051
S 903	Spring Switch(DSCSNS)	CSN1052
S 904	Switch(12EJ)	CSN1051
S 905	Switch(8EJ)	CSN1051

RESISTORS

R 101		RS1/10S1R5J
R 102		RS1/10S1R5J
R 103		RS1/10S1R5J
R 104		RS1/10S1R5J
R 105		RS1/10S1R5J
R 201		RS1/16S102J
R 202		RS1/16S1002D
R 203		RS1/16S1002D
R 204		RS1/16S1002D
R 205		RS1/16S1002D
R 206		RS1/16S1002D
R 207		RS1/16S1002D
R 208		RS1/16S1002D
R 209		RS1/16S1002D
R 214		RS1/16S103J
R 215		RS1/16S393J
R 216		RS1/16S122J
R 217		RS1/16S562J
R 218		RS1/16S472J
R 234		RS1/16S0R0J

Circuit Symbol and No.		Part No.
R 235		RS1/16S103J
R 236		RS1/16S103J
R 301		RS1/16S183J
R 302		RS1/16S822J
R 303		RS1/16S183J
R 304		RS1/16S822J
R 305		RS1/16S183J
R 306		RS1/16S183J
R 307		RS1/16S183J
R 308		RS1/16S183J
R 501		RS1/16S102J
R 503		RS1/16S102J
R 505		RS1/16S102J
R 506		RS1/16S221J
R 507		RS1/16S221J
R 508		RS1/16S221J
R 509		RS1/16S221J
R 601		RS1/16S101J
R 602		RS1/16S101J
R 603		RS1/16S0R0J
R 901		RS1/16S104J
R 902		RS1/16S473J
R 903		RS1/16S273J

CAPACITORS

C 101		CKSRYB104K16
C 102		CKSRYB104K16
C 103	100µF/16V	CCH1504
C 104	47µF/6.3V	CCH1506
C 108		CKSRYB104K16
C 109		CKSRYB104K16
C 201		CKSRYB104K16
C 202		CKSRYB471K50
C 205	22µF/6.3V	CCH1507
C 206		CKSRYB103K25
C 207		CKSRYB104K16
C 209		CKSRYB104K16
C 210		CKSRYB104K16
C 211		CKSRYB104K16
C 212		CKSRYB104K16
C 213		CKSRYB332K50
C 214		CKSRYB473K25
C 215		CKSRYB104K16
C 216		CKSRYB103K25
C 217		CCSRCH560J50
C 218		CCSRCH5R0C50
C 219		CKSRYB104K16
C 220		CKSRYB104K16
C 221		CKSRYB104K16
C 222		CKSRYB103K25
C 223		CCSRCH680J50
C 224		CCSRCH470J50
C 225		CKSRYB682K50
C 231		CKSRYB102K50
C 232		CKSRYB102K50
C 301	100µF/16V	CCH1504
C 302		CCSRCH221J50
C 303		CCSRCH221J50
C 304		CKSRYB472K50

Circuit Symbol and No.		Part No.
C 305		CKSRYB103K25
C 306		CKSRYB104K16
C 501		CKSRYB103K25
C 502		CKSRYB103K25
C 702	100µF/16V	CCH1504
C 703		CKSRYB104K16
C 705	10µF/6.3V	CCH1470

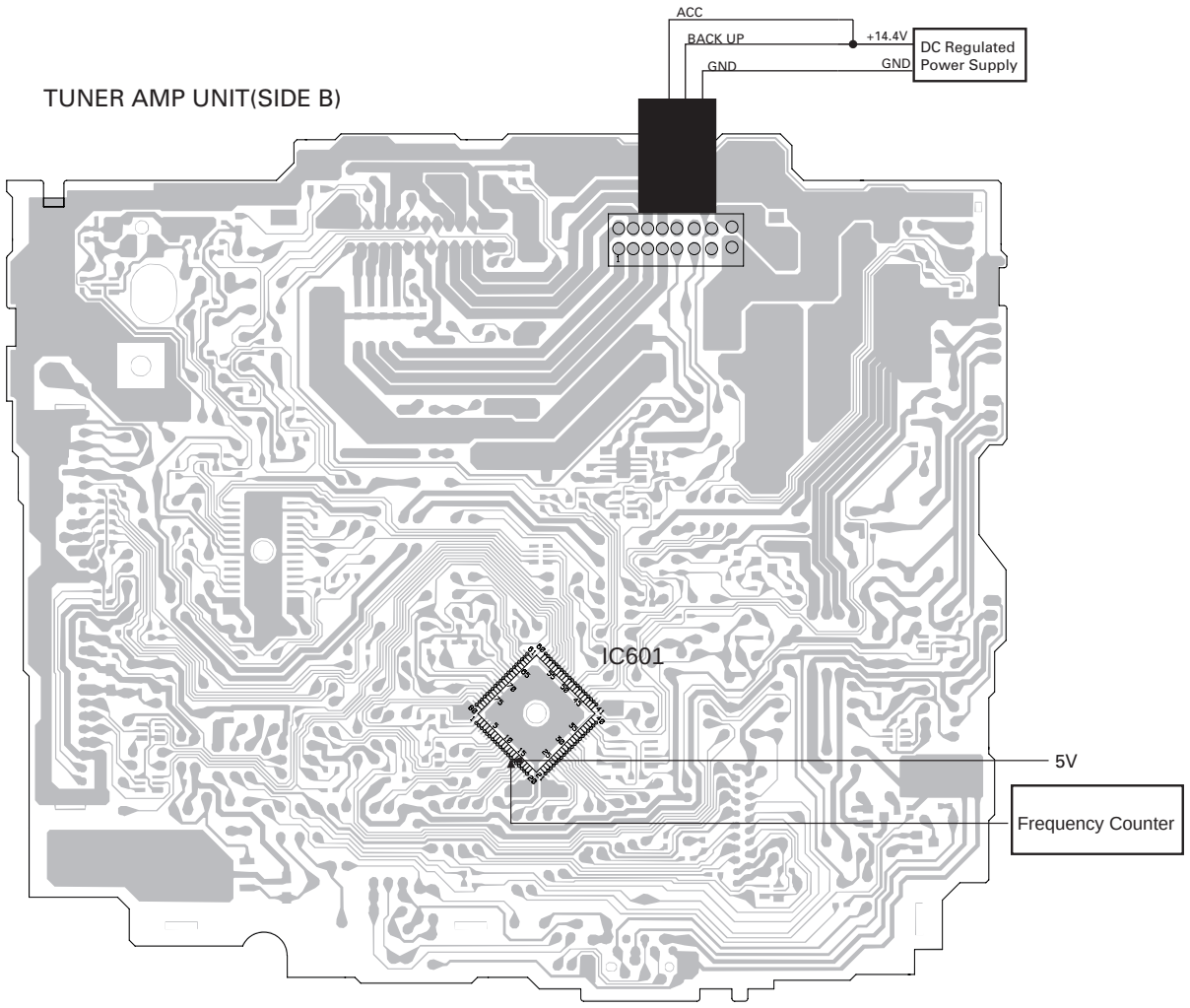
Miscellaneous Parts List

	Pickup Unit(P10)(Service)	CXX1647
M 1	Motor Unit(SPINDLE)	CXB6007
M 2	Motor Unit(LOADING/CARRIAGE)	CXB8933

6. ADJUSTMENT

6.1 FREQUENCY CHECK FOR CLOCK

● **Adjustment Point**



No.	Specification	Measuring Point	Note
1	786,432±31.5Hz	IC601 14pin(PCL)	1. ACC, B.UP ON 2. IC601 15pin : 5V

6.2 CD ADJUSTMENT

1) Cautions on adjustments
• In this product the single voltage (3.3V) is used for the regulator. The reference voltage is the REFO1 (1.65V) instead of the GND.
If you should mistakenly short the REFO1 with the GND during adjustment, accurate voltage will not be obtained, and the servo's misoperation will apply excessive shock to the pickup. To avoid such problems:
a. Do not mix up the REFO1 with the GND when connecting the (-) probe of measuring instruments. Especially on an oscilloscope, avoid connecting the (-) probe for CH1 to the GND.
b. In many cases, measuring instruments have the same potential as that for the (-) probe. Be sure to set the measuring instruments to the floating state.
c. If you have mistakenly connected the REFO1 to the GND, turn off the regulator or the power immediately.

• Before mounting and removing filters or leads for adjustment, be sure to turn off the regulator.

• For stable circuit operation, keep the mechanism operating for about one minute or more after the regulator is turned on.

• In the test mode, any software protections will not work. Avoid applying any mechanical or electrical shock to the mechanism during adjustment.

• The RFI and RFO signals with a wide frequency range are easy to oscillate. When observing the signals, insert a resistor of 1k ohms in series.

• The load and eject operation is not guarantied with the mechanism upside down. If the mechanism is blocked due to mistaken eject operation, reset the product or turn off and on the ACC to restore it.

2) Test mode
This mode is used to adjust the CD mechanism module.
• To enter the test mode.
While pressing the 4 and 6 keys at the same time, reset.
• To exit from the test mode.
Turn off the ACC and back up.

Notes:
a. During ejection, do not press any other keys than the EJECT key until the loaded disc is ejected.
b. If you have pressed the (→) key or (←) key during focus search, turn off the power immediately to protect the actuator from damage caused by the lens stuck.
c. For the TR jump modes except 100TR, the track jump operation will continue even if the key is released.
d. For the CRG move and 100TR jump modes, the tracking loop will be closed at the same time when the key is released.
e. When the power is turned off and on, the jump mode is reset to the single TR (91), the RF amp gain is set to 0dB, and the auto-adjustment values are reset to the default settings.

6.3 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT

• **Note :**
The grating angle of the PU unit cannot be adjusted after the PU unit is changed. The PU unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted PU unit for the CD mechanism module. Changing the PU unit is thus best considered as a last resort. However, if the PU unit must be changed, the grating should be checked using the procedure below.

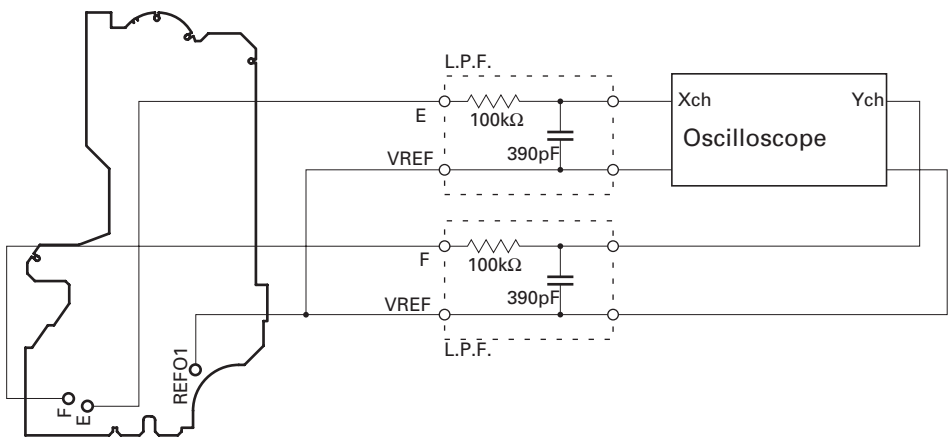
• **Purpose :**
To check that the grating is within an acceptable range when the PU unit is changed.

• **Symptoms of Mal-adjustment :**
If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or taking a long time for track searching.

• **Method :**

• Measuring Equipment	• Oscilloscope, Two L.P.F.
• Measuring Points	• E, F, REFO1
• Disc	• ABEX TCD-782
• Mode	• TEST MODE

CD CORE UNIT(S10.1)



• **Checking Procedure**
1. In test mode, load the disc and switch the 3V regulator on.
2. Using the → and ← buttons, move the PU unit to the innermost track.
3. Press key 3 to close focus, the display should read "91". Press key 2 to implement the tracking balance adjustment the display should now read "81". Press key 3. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75° . Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75° try changing the PU unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75° then the mechanism should be judged to be at fault.

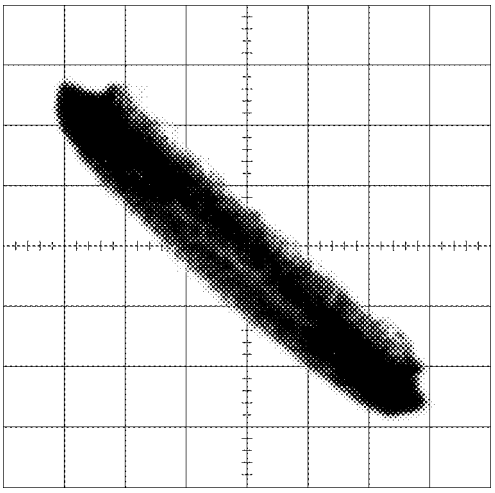
• **Note**
Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

• **Hint**
Reloading the disc changes the clamp position and may decrease the "wobble".

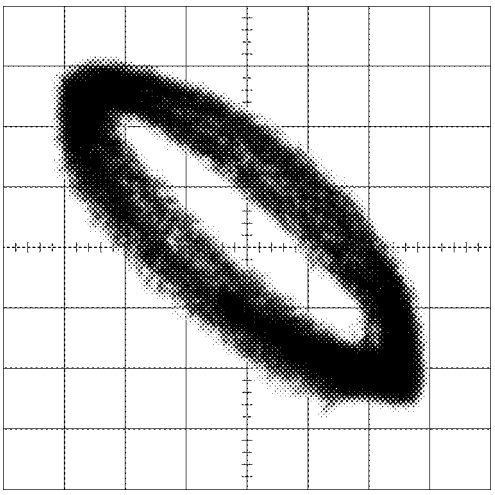
Grating waveform

Ech → Xch 20mV/div, AC
Fch → Ych 20mV/div, AC

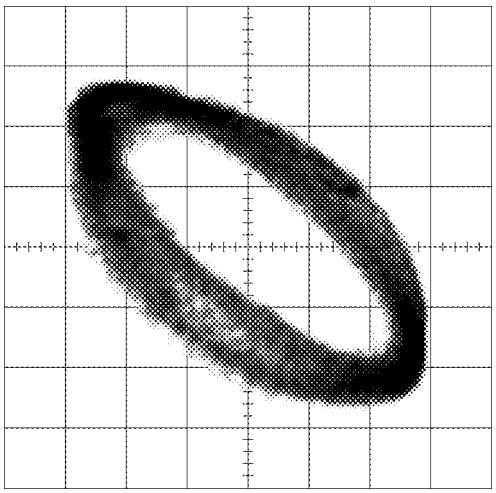
0°



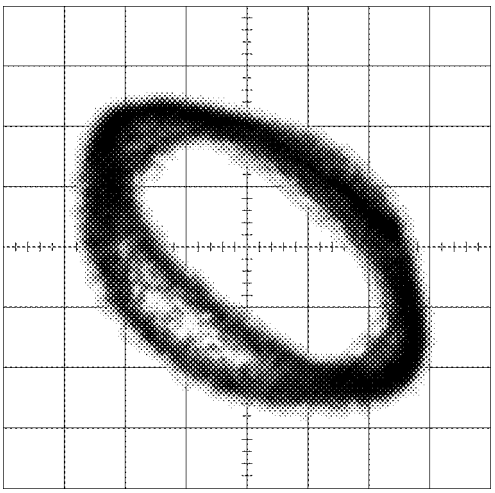
30°



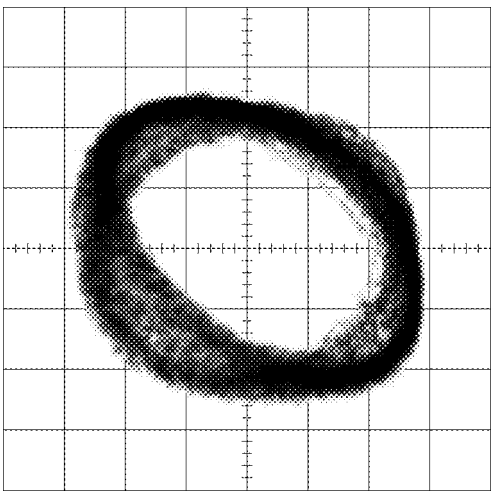
45°



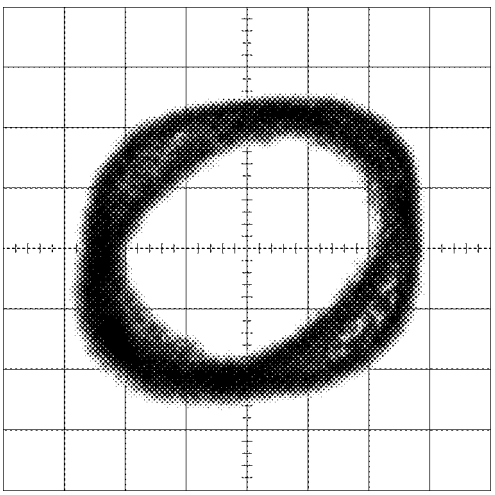
60°



75°



90°



6.4 ERROR MODE

● Error Messages

If a CD is not operative or stopped during operation due to an error, the error mode is turned on and cause(s) of the error is indicated with a corresponding number. This arrangement is intended at reducing nonsense calls from the users and also for facilitating trouble analysis and repair work in servicing.

(1) Basic Indication Method

1) When SERRORM is selected for the CSMOD (CD mode area for the system), error codes are written to DMIN (minutes display area) and DSEC (seconds display area). The same data is written to DMIN and DSEC. DTNO remains in blank as before.

2) Head unit display examples

Depending on display capability of LCD used, display will vary as shown below. xx contains the error number.

8-digit display	6-digit display	4-digit display
ERROR–xx	ERR–xx	E–xx

(2) Error Code List

Code	Class	Displayed error code	Description of the code and potential cause(s)
10	Electricity	Carriage Home NG SERVO LSI Communication Error	CRG can't be moved to inner diameter. CRG can't be moved from inner diameter. → Failure on home switch or CRG move mechanism. Communication error between microcomputer and SERVO LSI.
11	Electricity	Focus Servo NG	Focusing not available. → Stains on rear side of disc or excessive vibrations on REWRITABLE.
12	Electricity	Spindle Lock NG Subcode NG	Spindle not locked. Sub-code is strange (not readable). → Failure on spindle, stains or damages on disc, or excessive vibrations. A disc not containing CD-R data is found. Turned over disc are found, though rarely. CD signal error.
17	Electricity	Setup NG	AGC protection doesn't work. Focus can be easily lost. → Damages or stains on disc, or excessive vibrations on REWRITABLE.
30	Electricity	Search Time Out	Failed to reach target address. → CRG tracking error or damages on disc.
44	Electricity	ALL Skip	Skip setting for all track. (CD-R/RW)
50	Mechanism	CD On Mech Error	Mechanical error during CD ON. → Defective loading motor, mechanical lock and mechanical sensor.
A0	System	Power Supply NG	Power (VD) is ground faulted. → Failure on SW transistor or power supply (failure on connector).

Remarks: Mechanical errors are not displayed (because a CD is turned off in these errors).

Unreadable TOC does not constitute an error. An intended operation continues in this case.

Upper digits of an error code are subdivided as shown below:

1x: Setup relevant errors, 3x: Search relevant errors, Ax: Other errors.

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 DISASSEMBLY

● **Removing the Case (not shown)**

1. Remove the Case.

● **Removing the CD Mechanism Module (Fig.1)**

1 Remove the four screws.

Disconnect the connector and then remove the CD Mechanism Module.

● **Removing the Grille Assy (Fig.1)**

2 Release the two latchs and then remove the Grille Assy.

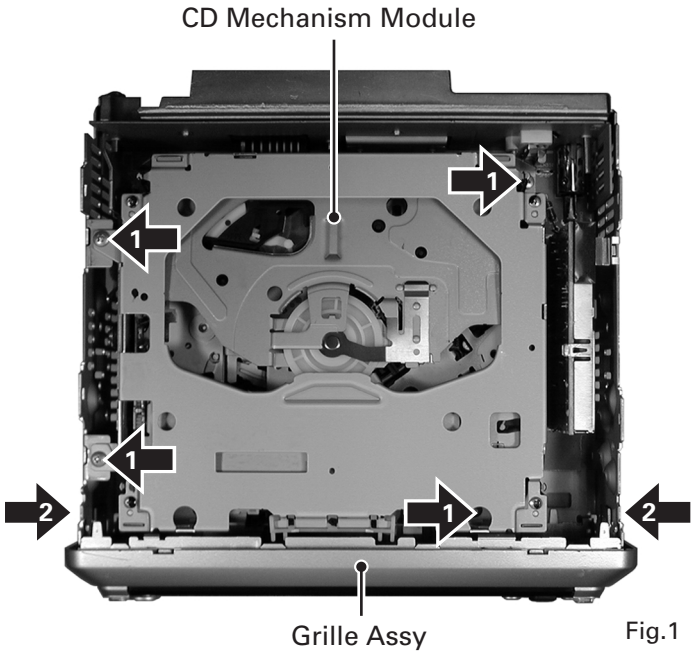


Fig.1

● **Removing the Tuner Amp Unit (Fig.2)**

1 Remove the screw.

2 Remove the three screws.

3 Straighten the tabs at three locations indicated.

4 Remove the screw and then remove the Tuner Amp Unit.

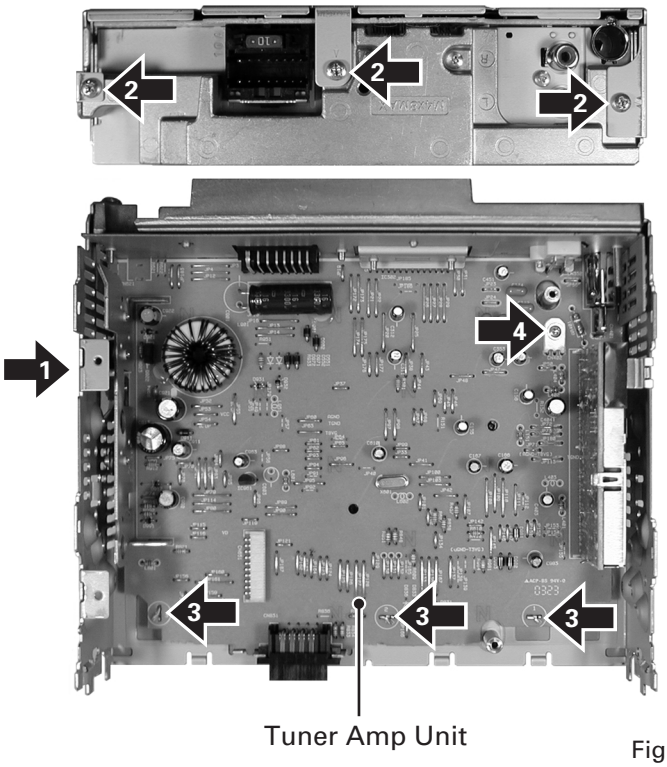
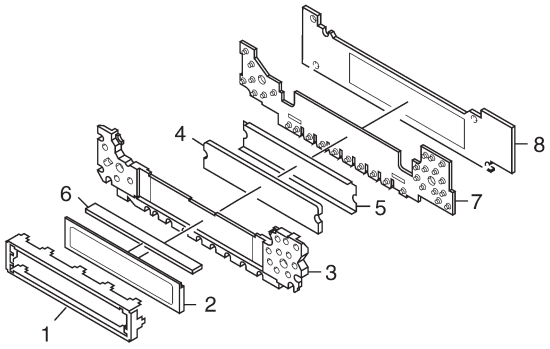


Fig.2

● **How to assemble Keyboard Unit**

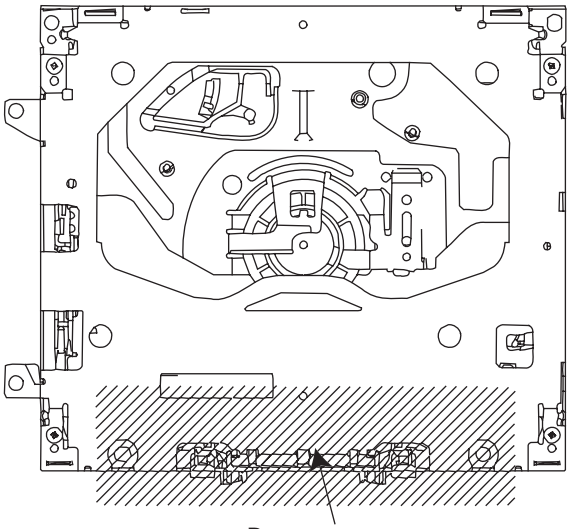
1. Assemble them in order from "1" to "8". (See the figure below.)
2. After that, bend the crows (7 in total) until they get the right angles with the marks printed on "8".

Note) If "5" is not set collectly, defective contact may occur on "6".
To avoid this problem, hold "5" using "7" just before putting "8".



● How to hold the Mechanism Unit

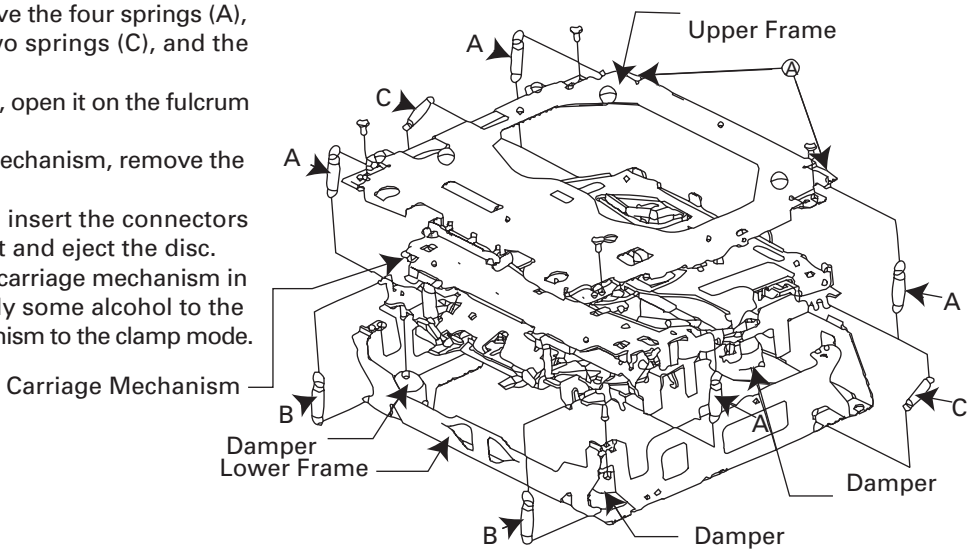
1. Hold the top and bottom frame.
2. Do not squeeze top frame's front portion too tight, because it is fragile.



● Removing the Upper and Lower Frames

1. With a disc clamped, remove the four springs (A), the two springs (B), the two springs (C), and the four screws.
2. To remove the upper frame, open it on the fulcrum A.
3. While lifting the carriage mechanism, remove the three dampers.
4. With the frames removed, insert the connectors coming from the main unit and eject the disc.

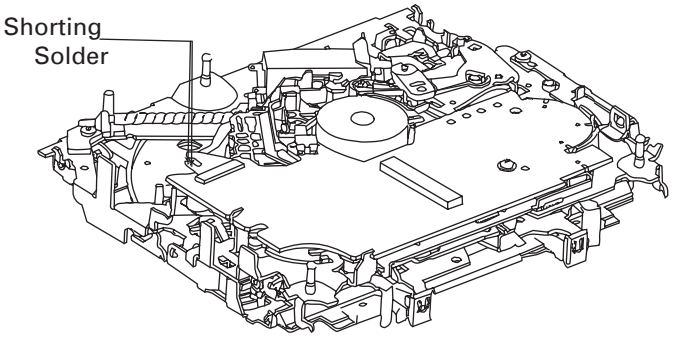
Caution: Before installing the carriage mechanism in the frames, be sure to apply some alcohol to the dampers and set the mechanism to the clamp mode.

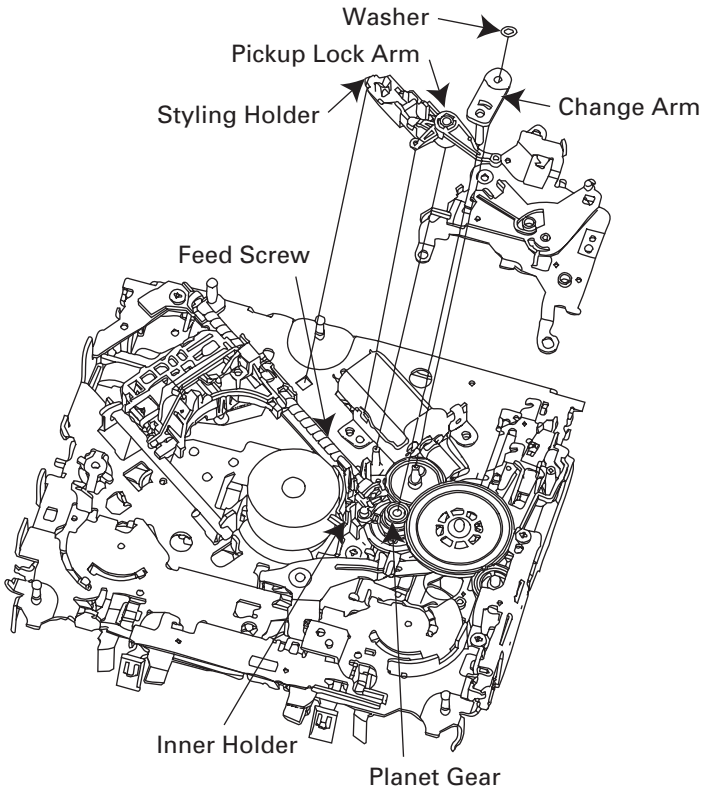


● Removing the Pickup Unit

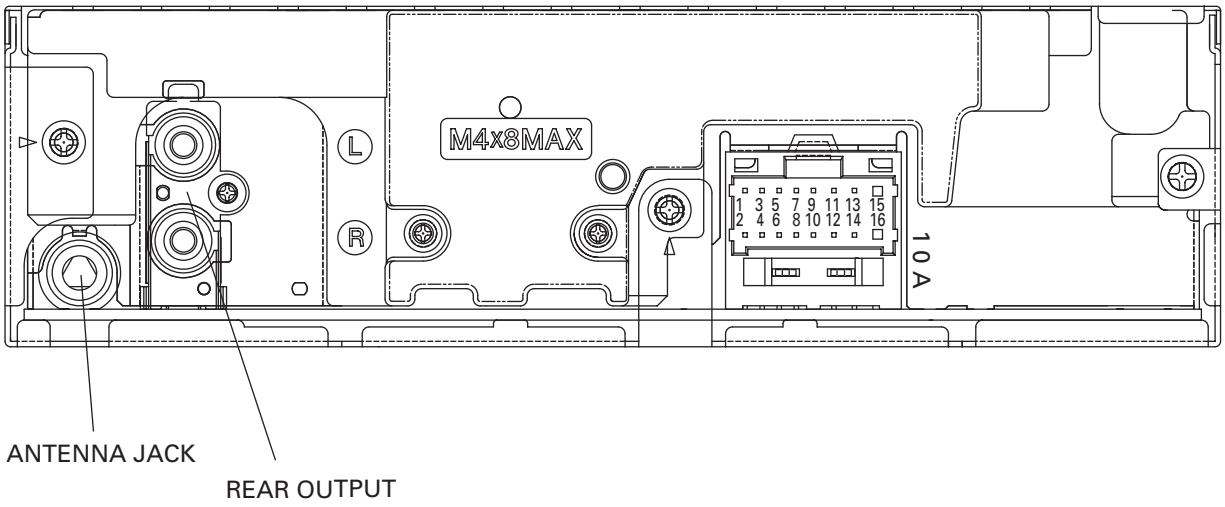
1. Apply shorting solder to the Pickup flexible cable. Disconnect the cable.
2. Set the mechanism to the clamp mode.
3. Remove the lead wires from the inner holder.
4. Remove the washer, styling holder, change arm, and pickup lock arm.
5. While releasing from the hook of the inner holder, lift the end of the feed screw.

Caution: In assembling, move the planet gear to the load/eject position before setting the feed screw in the inner holder.





7.1.2 CONNECTOR FUNCTION DESCRIPTION



Pin No.		Pin No.	
1	FR+	9	-
2	RR+	10	-
3	FR-	11	B.REMOTE
4	RR-	12	-
5	FL+	13	-
6	RL+	14	ACC
7	FL-	15	GND
8	RL-	16	B.UP

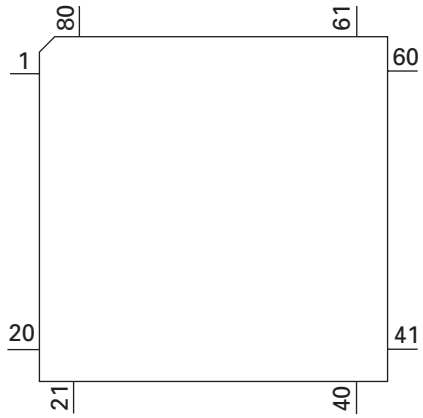
7.2 PARTS
7.2.1 IC

● **Pin Functions(PE5330C)**

Pin No.	Pin Name	I/O	Function and Operation
1	MODEL1		Model port 1
2,3	NC		Not used
4	AVSS		A/D GND
5,6	NC		Not used
7	AVREF1		A/D converter reference voltage
8	KYDT	I	Key data input
9	DPDT	O	Display data output
10	NC		Not used
11	TUNPDI	I	PLL IC data input
12	TUNPDO	O	PLL IC data output
13	TUNPCK	O	PLL IC clock output
14	PCL	O	Clock adjustment output
15	TESTIN	I	Test program mode input
16	XSI	I	Serial data input
17	XSO	O	Serial data output
18	XSCK	O	Serial data clock output
19,20	NC		Not used
21	$\overline{\text{SWVDD}}$	O	Keyboard unit power supply control output
22	ILMPW	O	Illumination power supply control output
23	NC		Not used
24	XRST	O	CD LSI reset output
25	XA0	O	CD LSI identification control signal output
26	XSTB	O	CD LSI strobe output
27	CLAMSW	O	Disc clamp switch output (CD)
28	CONT	O	Servo driver power supply control output
29	LOEJ	O	CD load motor LOAD/EJECT direction exchange output
30	CLCONT	O	Driver input select output
31	NC		Not used
32	DALMON	O	Stand-by output
33	VSS1		GND
34	TELIN	O	Telephone mute output
35,36	NC		Not used
37	ROMDATA	O	ROM data output
38,39	NC		Not used
40	RECIEVE		Not used
41	VDCONT	O	VD control output
42	NC		Not used
43	SYSPW	O	System power supply control output
44,45	NC		Not used
46	KEY2	I	Key data input (Remote control)
47	NC		Not used
48	MUTE	O	System mute output
49	ANTPW	O	Antenna output
50	NC		Not used
51	VST	O	Strobe pulse output for electronic volume
52	VDT	O	Data output for electronic volume
53	VCK	O	Clock output for electronic volume
54	NC		Not used
55	TUNPCE2	O	EEPROM chip enable output 2
56	TUNPCE1	O	EEPROM chip enable output 1
57-59	NC		Not used
60	$\overline{\text{RESET}}$	I	Reset input

Pin No.	Pin Name	I/O	Function and Operation
61	LDET	I	PLL lock sense input
62	NC		Not used
63	ASENS	I	ACC sense input
64	BSENS	I	Back up sense input
65	DSENS	I	Grille detach sense input
66	INTRQ	I	ATAPI HOST interrupt request input
67	VSS0		GND
68	VDD1		Power supply
69	X2		Crystal oscillator connection pin
70	X1		Crystal oscillator connection pin
71	IC(VPP)		Connect to GND
72	NC		Not used
73	XT1		Connect to GND
74	VDD0		Power supply
75	AVDD		Positive power supply terminal for analog circuit
76	SL	I	SD level input from tuner
77	TEMP		Not used
78	VDSENS	I	VD power supply voltage sense input
79	DISCSENS	I	CD DISC sense input
80	STRKEY1		Key data (Remote control)

* PE5330C

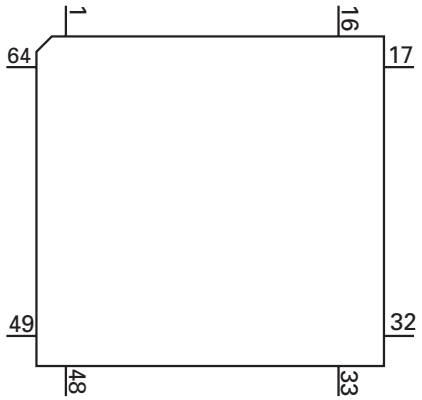


IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

● Pin Functions(PD6340A)

Pin No.	Pin Name	I/O	Function and Operation
1-5	SEG4-0	O	LCD segment output
6-9	COM3-0	O	LCD common output
10	VLCD		LCD drive power supply
11-14	KST3-0	O	Key strobe output
15,16	KDT0,1	I	Key data input (analogue input)
17	REW	I	Remote control reception input
18	DPDT	I	Display data input
19	NC		Not used
20	KYDT	O	Key data output
21	MODA		GND
22	X0		Crystal oscillator connection pin
23	X1		Crystal oscillator connection pin
24	VSS		GND
25,26	KDT2,3	I	Key data input
27	NC		Not used
28	KST4	O	Key strobe output
29-32	NC		Not used
33-55	SEG35-13	O	LCD segment output
56	VDD		Power supply
57-64	SEG12-5	O	LCD segment output

* PD6340A

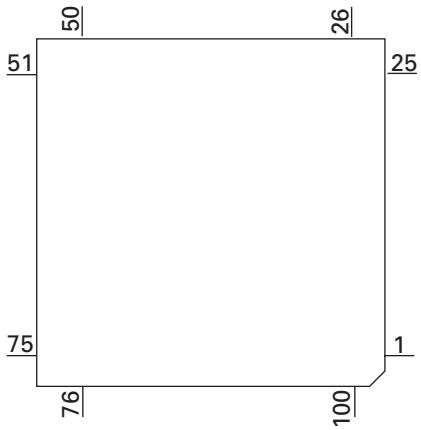


● Pin Functions(UPD63712AGC)

Pin No.	Pin Name	I/O	Function and Operation
1	LD	O	Output of LD
2	PD	I	Input of PD
3	PN	I	Assignment of pickup polarity
4	AVDD		Power supply for the analog system
5	DGND		Ground for digital circuits
6	RFOK	O	Output of RFOK
7	INTQ	O	Interruption signals to the external microcomputer
8	$\overline{\text{RST}}$	I	Input of reset
9	A0	I	Command/Parameter discrimination signal input
10	$\overline{\text{STB}}$	I	Data strobe signal input
11	$\overline{\text{SCK}}$	I	Serial data clock input
12	SO	O	Serial data output
13	SI	I	Serial data input
14	DVDD		Power supply for digital circuits
15	DAVDD		Power supply for DAC
16	ROUT	O	Output of audio for the right channel
17	DAGND		GND for DAC
18	REGC		Connected to the capacitor for band gap
19	DAGND		GND for DAC
20	LOUT	O	Output of audio for the left channel
21	DAVDD		Power supply for DAC
22	XVDD		Power supply for the crystal oscillator
23	$\overline{\text{XTAL}}$	O	Connected to the crystal oscillator
24	XTAL	I	Connected to the crystal oscillator
25	XGND		Ground for the crystal oscillator
26	DVDD		Power supply for digital circuits
27	C1D1	O	Information on error correction
28	C1D2	O	Information on error correction
29	C2D1	O	Information on error correction
30	C2D2	O	Information on error correction
31	C2D3	O	Information on error correction
32	LOCK	O	Output of LOCK
33	MIRR	O	MIRR signal
34	HOLD	O	HOLD signal
35	PLCK	O	Output of PLCK
36	C16M	O	Output of 16.9344MHz
37	DGND		Ground for digital circuits
38	TX	O	DAI output
39	EMPH	O	Pre-emphasis information output
40	FLAG	O	The flag for which output sound data cannot be corrected is outputted
41	DVDD		Power supply for digital circuits
42	LIMIT	I	Signal is inputted when the register can be read
43	$\overline{\text{XTALEN}}$	I	Permission to oscillate
44	DGND		Ground for digital circuits
45	DIN	I	Input of audio data
46	DOUT	O	Output of audio data
47	SCKIN	I	Clock input for audio data
48	SCKO	O	Clock output for audio data
49	LRCKIN	I	Input of LRCK for audio data
50	LRCK	O	Output LRCK for audio data
51	DVDD		Power supply for digital circuits
52	FD+	O	Output of focus drive PWM
53	FD-	O	Output of focus drive PWM
54	TD+	O	Output of tracking drive PWM
55	TD-	O	Output of tracking drive PWM
56	SD+	O	Output of thread drive PWM
57	SD-	O	Output of thread drive PWM
58	MD+	O	Output of spindle drive PWM
59	MD-	O	Output of spindle drive PWM
60	DGND		Ground for digital circuits

Pin No.	Pin Name	I/O	Function and Operation
61	TESTEN	I	Connected to GND
62-66	TEST4-0	I	Connected to GND
67	ADGND		GND for DAC
68	EFM	O	Output of EFM signals
69	ASY	I	Input of asymmetry
70	ADVDD		Power supply for DAC
71	RFI	I	Input of RF
72, 73	EQ2, 1		Equalizer 2, 1
74	RF-	I	Reversal input of RF
75	RF2-	I	Reversal input of RF2
76	AGCO	O	Output of RF
77	AGCI	I	Input of AGC
78	RFO	O	Output of RF
79	ATEST	O	Analog tests
80	C3T		Connection to the capacitor for detecting 3T
81	AGND		Ground for the analog system
82	A	I	Input of A
83	C	I	Input of C
84	B	I	Input of B
85	D	I	Input of D
86	F	I	Input of F
87	E	I	Input of E
88	VREFIN	I	Photo-detector input bias voltage
89	AVDD		Power supply for the analog system
90	REFOUT	O	Output of reference voltage
91	REFC		Connected to the capacitor for output of REFOUT
92	FE-	I	Reversal input of FE
93	FEO	O	Output of FE
94	ADCIN	I	TEST
95	TE-	I	Reversal input of TE
96	TEO	O	Output of TE
97	TE2	O	TE2
98	TEC	I	TEC
99	AGND		Ground for the analog system
100	PWMSW	I	Servo PWM mode switching

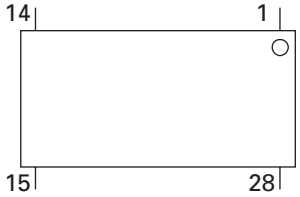
* UPD63712AGC



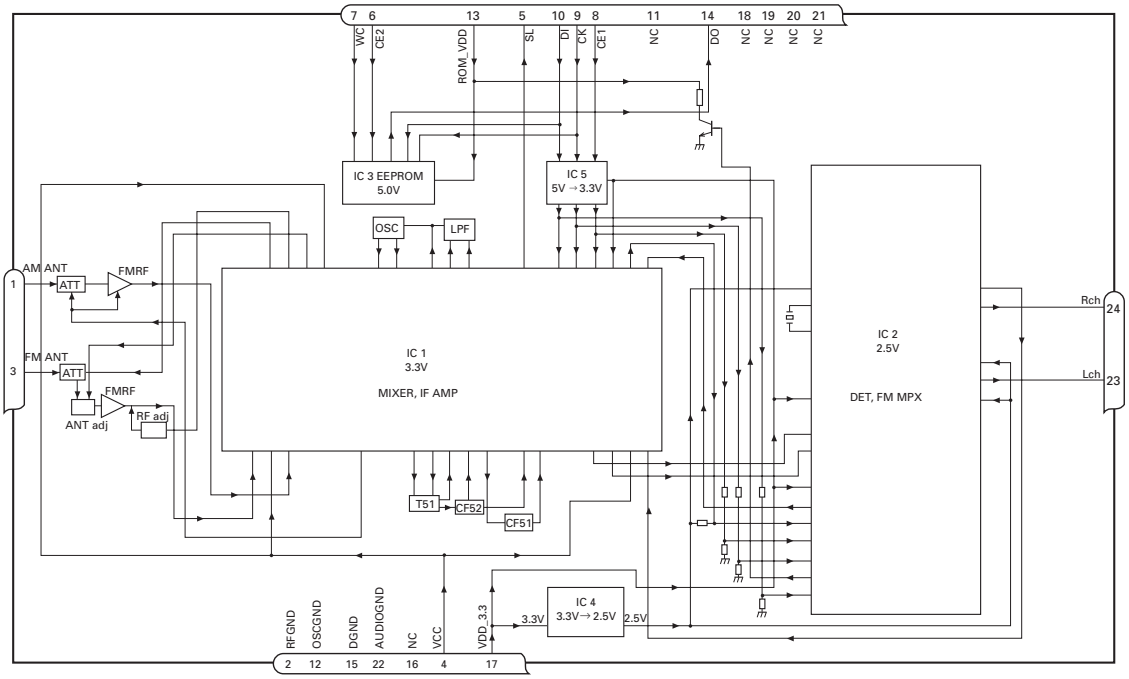
● Pin Functions(BA5835FP)

Pin No.	Pin Name	Function and Operation
1	VR	Input pin for reference voltage
2	OPIN2(+)	Input pin for non-inverting input for CH2 preamplifier
3	OPIN2(-)	Input pin for inverting input for CH2 preamplifier
4	OPOUT2	Output pin for CH2 preamplifier
5	OPIN1(+)	Input pin for non-inverting input for CH1 preamplifier
6	OPIN1(-)	Input pin for inverting input from CH1 preamplifier
7	OPOUT1	Output pin for CH1 preamplifier
8	GND	Ground pin
9	MUTE	Mute control pin
10	POWVCC1	Power supply pin for CH1, CH2, and CH3 at "Power" stage
11	VO1(-)	Driver CH1 - Negative output
12	VO1(+)	Driver CH2 - Positive output
13	VO2(-)	Driver CH2 - Negative output
14	VO2(+)	Driver CH2 - Positive output
15	VO3(+)	Driver CH2 - Positive output
16	VO3(-)	Driver CH2 - Negative output
17	VO4(+)	Driver CH4 - Positive output
18	VO4(-)	Driver CH4 - Negative output
19	POWVCC2	Power supply pin for CH4 at "Power" stage
20	GND	Ground pin
21	CNT	Control pin
22	LDIN	Loading input
23	OPOUTSL	Output pin for preamplifier for thread
24	OPINLSL	Input pin for preamplifier for thread
25	OPOUT3	CH3 preamplifier output pin
26	OPIN3(-)	Input pin for inverting input for CH3 preamplifier
27	OPIN3(+)	Input pin for non-inverting input for CH3 preamplifier
28	PREVCC	PreVcc

BA5835FP



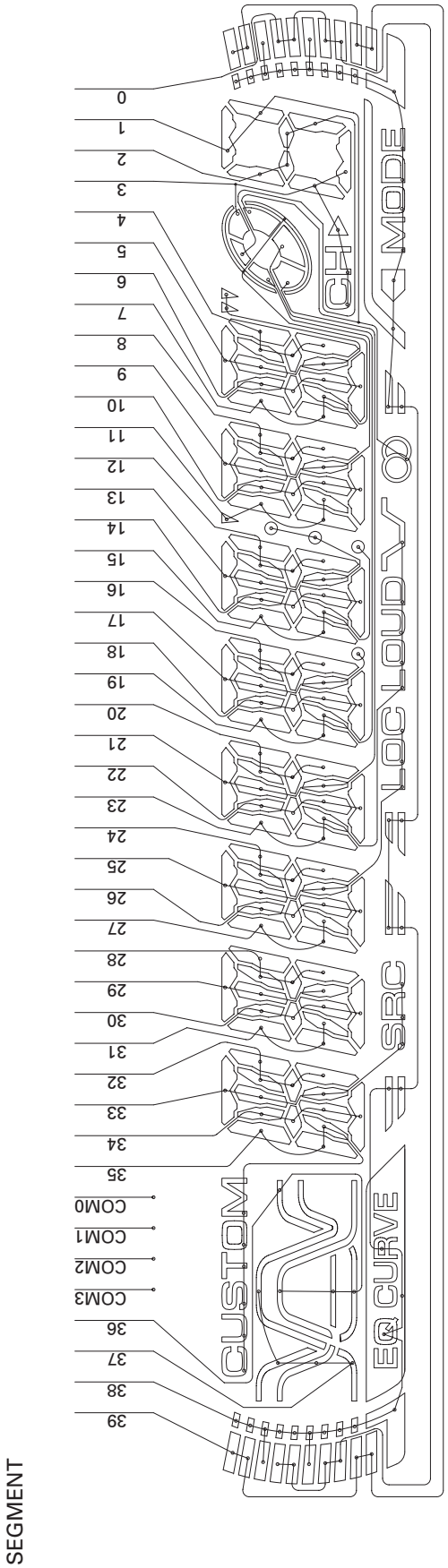
● FM/AM Tuner Unit

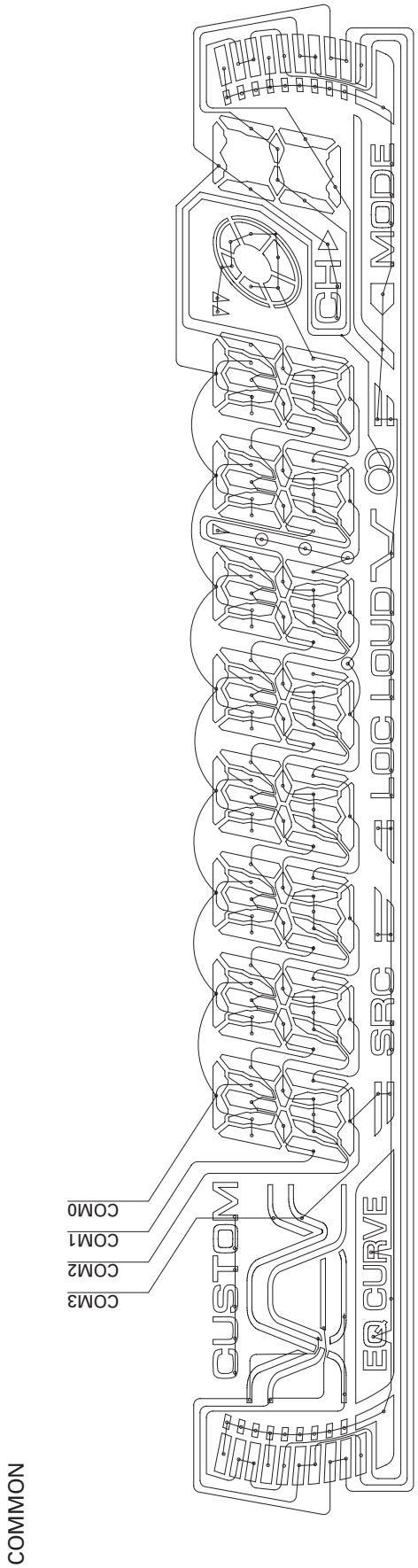


No.	Symbol	I/O	Explain	
1	AMANT	I	AM antenna input	AM antenna input high impedance AMANT pin is connected with an all antenna by way of 4.7μH. (LAU type inductor) A series circuit including an inductor and a resistor is connected with RF ground for the countermeasure against the ham of power transmission line.
2	RFGND		RF ground	Ground of antenna block
3	FMANT	I	FM antenna input	Input of FM antenna 75Ω Surge absorber(DSP-201M-S00B) is necessary.
4	VCC		power supply	The power supply for analog block. D.C 8.4V ± 0.3V
5	SL	O	signal level	Output of FM/AM signals level
6	CE2	I	chip enable-2	Chip enable for EEPROM "Low" active
7	WC	I	write control	You can write EEPROM, when EEPROM write control is "Low". Ordinary non connection
8	CE1	I	chip enable-1	Chip enable for AF•RF "High" active
9	CK	I	clock	Clock
10	DI	I	data in	Data input
11	NC		non connection	Not used
12	OSCGND		osc ground	Ground of oscillator block
13	ROM_VDD		power supply	Power supply for EEPROM pin 13 is connected with a power supply of micro computer.
14	DO	O	data out	Data output
15	DGND		digital ground	Ground of digital block
16	NC		non connection	Not used
17	VDD_3.3		power supply	The power supply for digital block. 3.3V ± 0.2V
18	NC		non connection	Not used
19	NC		non connection	Not used
20	NC		non connection	Not used
21	NC		non connection	Not used
22	AUDIOGND		audio ground	Ground of audio block
23	L ch	O	L channel output	FM stereo "L-ch" signal output or AM audio output
24	R ch	O	R channel output	FM stereo "R-ch" signal output or AM audio output

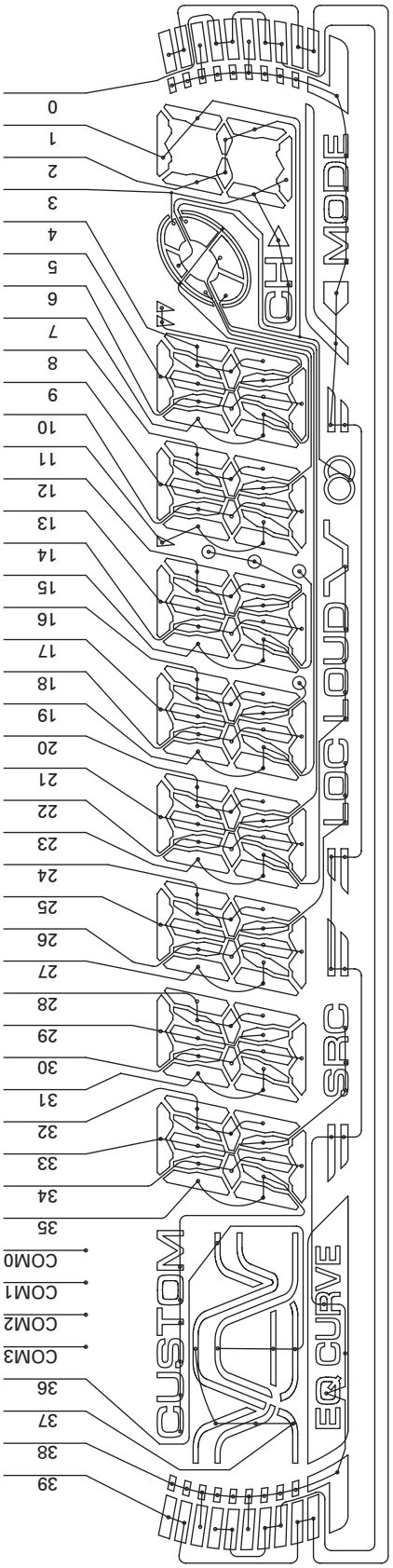
7.2.2 DISPLAY

● **LCD(CAW1801(DEH-1650/XU/ES), YAW5004(DEH-1650/XU/CN))**

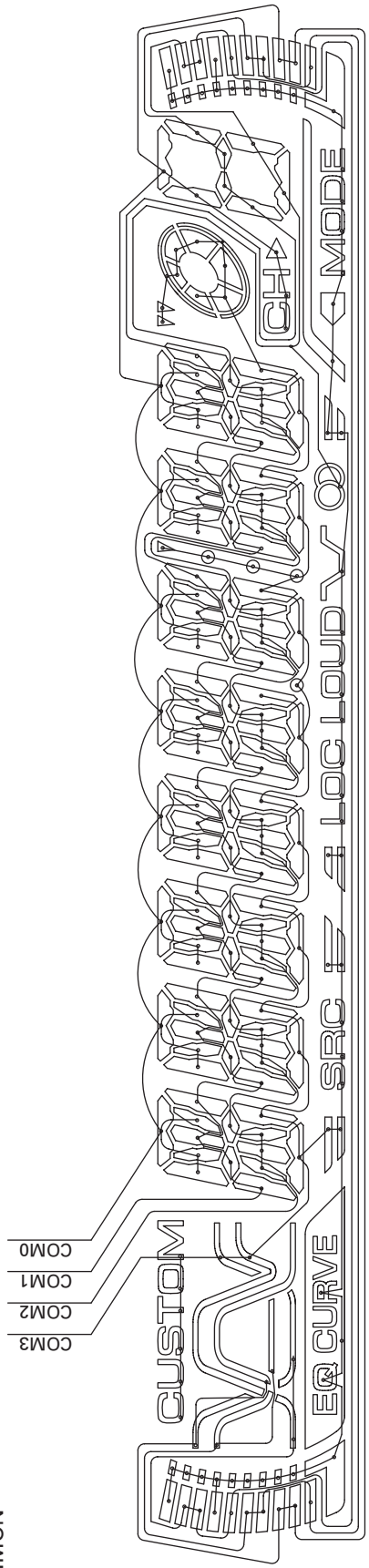




● LCD(YAW5003(DEH-1650B/XU/ES))

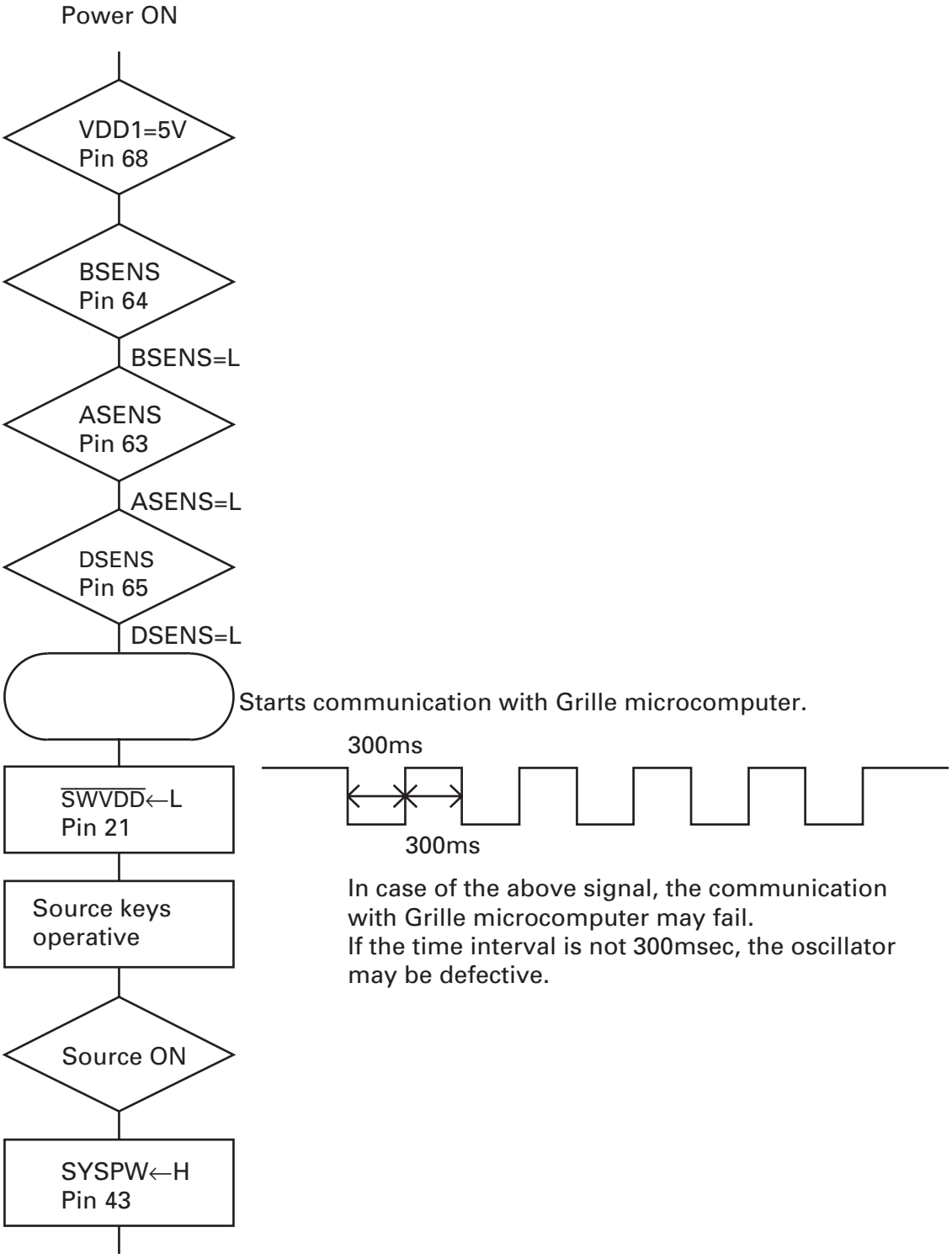


SEGMENT



COMMON

7.3 OPERATIONAL FLOW CHART



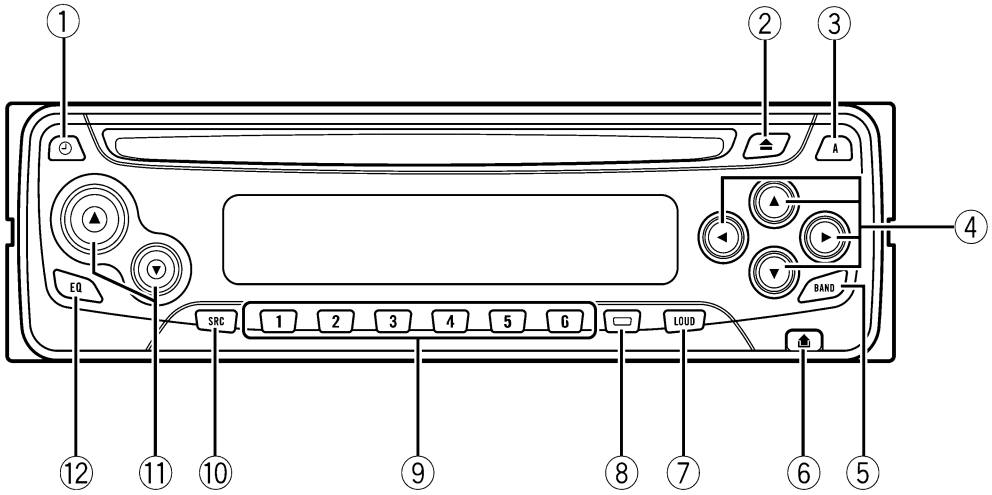
Completes power-on operation.(After that, proceed to each source operation.)

7.4 CLEANING

Before shipping out the product, be sure to clean the following portions by using the prescribed cleaning tools:

Portions to be cleaned	Cleaning tools
CD pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

8. OPERATIONS



Head unit

① **CLOCK button**
Press to change to the clock display.

② **EJECT button**
You can eject a CD by pressing **EJECT**.

③ **AUDIO button**
Press to select various sound quality controls.

④ **▲/▼/◄/► buttons**
Press to do manual seek tuning, fast forward, reverse and track search controls. Also used for controlling functions.

⑤ **BAND button**
Press to select among three FM and one AM bands and cancel the control mode of functions.

⑥ **DETACH button**
Press **DETACH** to release the front panel.

⑦ **LOUDNESS button**
Press to turn loudness on or off.

⑧ **LOCAL/BSM button**
Press to turn local function on or off.
Press and hold to turn BSM function on or off.

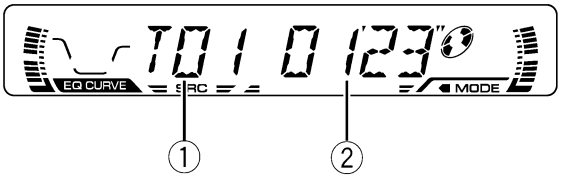
⑨ **1–6 buttons**
Press for preset tuning.

⑩ **SOURCE button**
This unit is turned on by selecting a source. Press to cycle through all of the available sources.

⑪ **VOLUME**
Press to increase or decrease the volume.

⑫ **EQ button**
Press to select various equalizer curves. ▣

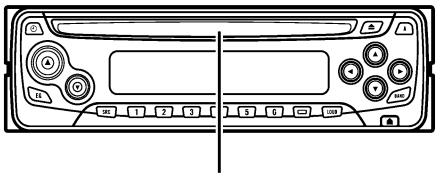
Playing a CD



① **Track number indicator**
Shows the track currently playing.

② **Play time indicator**
Shows the elapsed playing time of the current track.

1 Insert a CD into the CD loading slot.
Playback will automatically start.



- You can eject a CD by pressing **EJECT**.

2 After a CD has been inserted, press SOURCE to select the built-in CD player.

3 Use VOLUME to adjust the sound level.

4 To perform fast forward or reverse, press and hold ◄ or ►.

5 To skip back or forward to another track, press ◄ or ►.
Pressing ► skips to the start of the next track. Pressing ◄ once skips to the start of the current track. Pressing again will skip to the previous track.

Notes

- The built-in CD player plays one, standard, 12-cm or 8-cm (single) CD at a time. Do not use an adapter when playing 8-cm CDs.
- Do not insert anything other than a CD into the CD loading slot.
- If you cannot insert a disc completely or if after you insert a disc the disc does not play, check that the label side of the disc is up. Press **EJECT** to eject the disc, and check the disc for damage before inserting the disc again.
- If the built-in CD player does not operate properly, an error message such as **ERROR-11** may be displayed. ▣

Playing tracks in a random order

Random play lets you play back tracks on the CD in a random order.

1 Press 4 to turn random play on.
RDM appears in the display. Tracks will play in a random order.

2 Press 4 to turn random play off.
Tracks will continue to play in order. ▣

Repeating play

Repeat play lets you hear the same track over again.

1 Press 5 to turn repeat play on.
RPT appears in the display. The track currently playing will play and then repeat.

2 Press 5 to turn repeat play off.

The track currently playing will continue to play and then play the next track.

Note

If you perform track search or fast forward/reverse, repeat play is automatically cancelled.

Pausing CD playback

Pause lets you temporarily stop playback of the CD.

1 Press 6 to turn pause on.

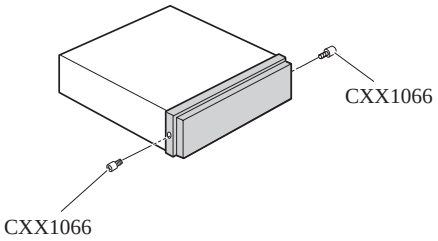
PAUSE appears in the display. Play of the current track pauses.

2 Press 6 to turn pause off.

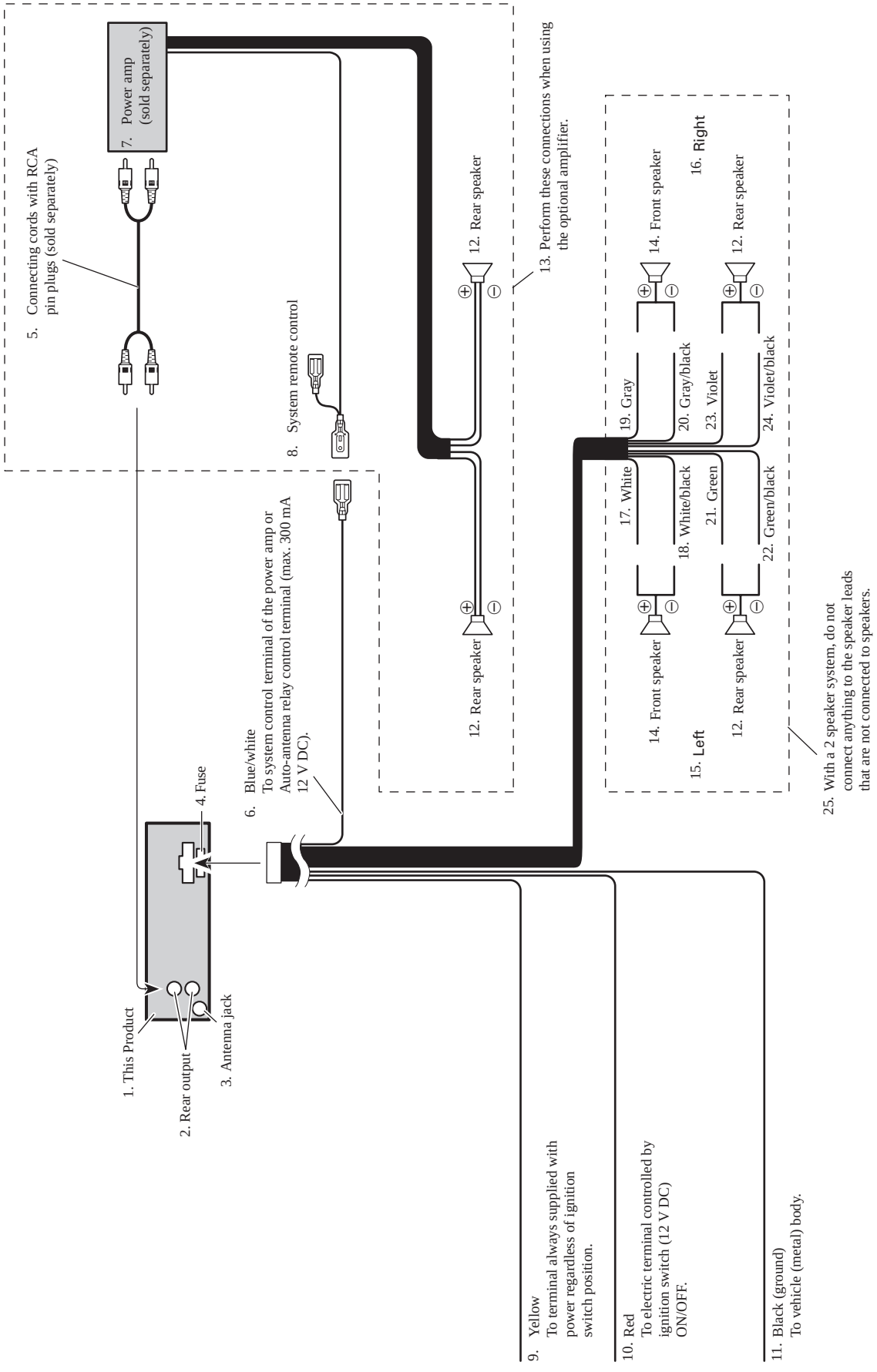
Play will resume at the same point that you turned pause on.

About the fixing screws for the front panel

If you do not operate the Detaching and Replacing the Front Panel Function, use the supplied fixing screws and fix the front panel to this unit.



● CONNECTION DIAGRAM


7. Power amp (sold separately)
5. Connecting cords with RCA pin plugs (sold separately)
8. System remote control
12. Rear speaker
13. Perform these connections when using the optional amplifier.
14. Front speaker
16. Right
12. Rear speaker
19. Gray
20. Gray/black
23. Violet
24. Violet/black
17. White
18. White/black
21. Green
22. Green/black
15. Left
14. Front speaker
12. Rear speaker
12. Rear speaker
25. With a 2 speaker system, do not connect anything to the speaker leads that are not connected to speakers.
6. Blue/white
To system control terminal of the power amp or Auto-antenna relay control terminal (max. 300 mA 12 V DC).
4. Fuse
1. This Product
2. Rear output
3. Antenna jack
9. Yellow
To terminal always supplied with power regardless of ignition switch position.
10. Red
To electric terminal controlled by ignition switch (12 V DC) ON/OFF.
11. Black (ground)
To vehicle (metal) body.